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INVESTMENT JUSTIFICATION OF ROBOTIC TECHNOLOGY IN  
AEROSPACE MANUFACTURING

James A. Simpson  
Applied Concepts Corporation  
109K North Main Street  
Woodstock, VA 22664

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Final Report and Robotics Investment Decision Model  
(RIDM) User's Manual  
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## EXECUTIVE SUMMARY

This report is the product of a three phase research project entitled "Investment Justification of Robotic Technology in Aerospace Manufacturing". The objective of the project was to develop a microcomputer-based economic analysis methodology suitable for use by U.S. aerospace manufacturers to assess investments in robotics and flexible manufacturing systems.

In Phase I, a nation-wide survey was performed of robotics investment analysis methodologies used or proposed by government, industry, and academia. The survey included discussions with financial, engineering, and management personnel at eight major U.S. aerospace corporations, to determine their needs and constraints, and how a model might best be designed. The Phase I report is available through DTIC—(accession number) AD-A140782.

Phase II was the model development phase. The model was written as a Lotus 1-2-3 template, and is called the "Robotics Investment Decision Model" (RIDM). The Phase II report is also available through DTIC—(accession number) AD-A145467.

Phase III was a review and field test of the model. RIDM was demonstrated to several USAF organizations, and was assessed by a major

U.S. aerospace manufacturer. Internal testing continued, improving RIDM through several format changes, one minor technical change, and adding a few new features. The model is now ready for release to the aerospace industry.

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## I. INTRODUCTION

1. The robotics investment decision model (RIDM) is a tool designed for assessing the economic attractiveness of investments in robotics and/or flexible manufacturing systems (FMS). It models the cash flows generated by such an investment, as compared to the existing method of manufacture or other alternative. Required inputs are the costs under both the robotic/FMS approach (new method) and the existing or old method. Additional inputs are required if the user exercises the option in the model to consider changes in work station throughput or differences in value added at the work station. Model outputs are nominal cash flow, discounted cash flow, internal rate of return, and net present value of the investment at the user-specified discount rate. Before tax and after tax analyses are provided by the model.
2. The model is written as a template for Lotus 1-2-3, one of the popular "electronic spreadsheet" programs. The model was developed on the Zenith Z-100 version of Lotus 1-2-3, Release 1A, running under Z-DOS/MS-DOS release 1.01, version 1.25. To use the model as written, you will need a personal computer which can run Lotus 1-2-3, a disk drive that can read the data diskette on which the model has been installed, and 256 kilobytes of random access memory (RAM). Users with less than 256K RAM can still run the model, but may find it necessary to break it into smaller files. The recommended place for the initial break is just before the after tax analysis section. The model enables the user to specify an analysis period of from 3 to 15 years.

3. Most IBM PC and IBM-compatible personal computers will be able to run Lotus 1-2-3 and read the RIDM data diskette on which the model is stored. The exact software and memory requirements for using the model will depend upon the versions of Lotus 1-2-3 and DOS that your system uses. Newer versions of DOS (Version 2.0) and Lotus (Release 1A) have more features and require more memory than earlier versions. The preferred RAM availability remains 256K.

4. Use of the model requires an intermediate knowledge of Lotus 1-2-3. The model's structure and commands have been kept as simple as possible, to ensure the broadest use throughout industry and to enable the user to modify the model as required to reflect special circumstances of a company or robotic/FMS application. The model contains no range names. All cell references are relative.

5. RIDM assesses the inherent economic attractiveness of robotic/FMS implementation. The model is based on real economic events and not on how those events are accounted for. For example, the cost of robot hardware is considered to be its purchase price (plus shipping, set up, etc.) plus the interest expense for any funds borrowed to make the purchase. An account-based approach would treat the depreciation expense as the cost. RIDM models the true economic return, both before and after taxes. It does not directly model the impact upon company financial statements, as would an account-based approach. However, RIDM is structured in a way which facilitates modifications to perform additional analyses. Although few computer skills are required to effectively use the model, the user should have a good working knowledge of engineering economy concepts such as

discounting, internal rate of return, and net present value.

6. RIDM does not address the multitude of special considerations imposed when doing business with the Federal Government under cost-based contracts. Primary among these are the impacts of government cost accounting standards (CAS) upon cash flows and the impact of cost changes upon prices. The Tech Mod/IMIP Model, recently developed by Logistics Management Institute (and sometimes called the LMI Discounted Cash Flow Model), directly addresses these considerations.

## II. PROGRAM DESCRIPTION

1. This section presents a short description of the Robotics Investment Decision Model. Step-by-step instructions on how to operate the model are presented in the next section.

2. The program software is written as a Lotus 1-2-3 spreadsheet, and a basic working knowledge of Lotus 1-2-3 is prerequisite for using the model. The length of the analysis period (from 3 to 15 years) is specified by the user through a keyboard macro. In response to the user input, the macro automatically constructs the spreadsheet to the desired size, makes required changes to all algorithms, and erases itself when finished to save working memory and disk space. The general structure of the model is in two parts and is summarized below:

a. Before Tax Analysis

- 1) Old Method Cost Elements
- 2) New Method Cost Elements
- 3) Cash Flow from Investment
- 4) Internal Rate of Return (IRR) and Net Present Value (NPV)
- 5) Production Quantity Adjustment
- 6) Adjustment for Changes in Quality or Value Added
- 7) Summary of Results of Before Tax Analysis

b. After Tax Analysis

- 1) Computation of Depreciation, Investment Tax Credits,

and Tax Savings for Old Method

2) Computation of Depreciation, Investment Tax Credits,

and Tax Savings for New Method

3) Summary of Results of After Tax Analysis

3. Each section of the model is described below in more detail.

a. Before Tax Analysis

(1) Old Method Cost Elements

This section is for user inputs on the costs of the existing or baseline manufacturing method.

(2) New Method Cost Elements

This section is for user inputs on the costs of the new or alternative manufacturing method, that is, the robotic or FMS technology.

(3) Cash Flow from Investment

This section is computed by the model. The net cash flow from moving from the old method to the new method is presented for each cost element. The overall net cash flow for each year is also presented.

(4) Internal Rate of Return (IRR) and Net Present Value (NPV)

The model then computes the IRR and NPV of the investment.

(5) Production Quantity Adjustment

This section is optional. It adjusts the cash flow estimates to reflect the differences in throughput (output) between the old and new method. The throughput effect's impact on cash flow is computed by considering the cost per unit of production under each method, and determining how much more or less it would cost under the old method to produce the same amount as under the new method.

(6) Adjustment for Changes in Quality or Value Added

This section is optional. It adjusts the cash flows for the difference in value added at the work station per unit of output.

**(7) Summary of Results of Before Tax Analysis**

In this section, the model computes and displays the adjusted annual cash flow, cumulative cash flow, adjusted IRR, and NPV of the investment. Annual and cumulative discounted cash flows are also presented. All results reflect before tax conditions.

**b. After Tax Analysis**

**(1) Computation of Depreciation, Investment Tax Credits, and Tax Savings for Old Method**

This section of the model computes the depreciation, investment tax credits, and the tax savings from depreciation and non-depreciable business costs for the old method. The required input is the investment schedule for each class of depreciable property. A section is provided for an optional analysis of state and local tax impacts, to be custom designed by the user.

**(2) Computation of Depreciation, Investment Tax Credits, and Tax Savings for New Method**

This section performs the same function as the previous one, but for the new method. It computes the depreciation, investment tax credits, and the tax savings from depreciation and non-depreciable business costs for the new method. The required input is the investment schedule for each class of depreciable property. A section is provided for an optional analysis of state and local tax impacts, to be custom designed by the user.

**(3) Summary of Results of After Tax Analysis**

This section computes and displays the annual and cumulative after-tax

cash flow, IRR, NPV, discounted cash flow, and the IRR based on the discounted cash flow.

### III. OPERATING INSTRUCTIONS

#### 1. General Instructions

a. The user first specifies the length of the analysis period by accessing a keyboard macro. He then inputs the costs under the old method of production for each year to be considered, and then does the same for the robotic/FMS approach. A list of recommended cost elements is provided for guidance. The model then computes nominal cash flows, that is, the differences in costs, and the internal rate of return (IRR) and net present value (NPV) of the investment. The user is then provided the option of considering differences in throughput between the two alternative methods. After this, there is an option for considering differences in value added at the workstation per unit of production. The model then performs and displays a summary of the before tax analysis, providing undiscounted and discounted cash flows, IRR, and NPV of the investment at a user-specified discount rate.

b. An after tax analysis is performed next. The user inputs the investment schedule for depreciable property, by asset class, for both the old and new methods. The model computes the investment tax credit and accelerated cost recovery system (ACRS) depreciation for each year, and the federal tax impact upon cash flow, for both the old and new methods. Space is provided for custom-built analyses of state and local income taxes under both old and new methods. The last section is a summary report, providing before tax undiscounted cash flow, and the impact upon cash flow from investment tax credits, depreciation, non-depreciable business costs, and

state and local taxes. After tax cash flow is presented by year, as is cumulative cash flow. The after tax IRR is presented, as is the NPV of the investment at the user-specified discount rate. After tax discounted cash flow is presented by year, and then cumulatively by year, followed by the IRR based on the discounted cash flow.

## 2. Detailed Instructions

### a. Getting Started

(1) After accessing the RIDM program file, the user types in "Alt-A", or its functional equivalent (e.g. "Control-Shift-A" on the Zenith Z-100). This will exercise the macro. A statement will appear on the screen instructing the user to enter the number of years to compute, that is, the desired length of the analysis period. The model can accomodate an analysis period of from 3 to 15 years. After the user enters the number, the model will construct the template to the desired size (desired number of analysis years), and then erase the macro. The new template should be saved as the working file, under a name other than "RIDM".

(2) Modifications should not be made to the RIDM program file. The user should wait until the macro has been exercised and erased before making any changes to the template. If for any reason the user decides to change the contents of the RIDM program file, he must also modify the macros to reflect those changes. Depending on the change, failure to do this can prevent the model from executing or cause egregious errors in the computations.

(3) After the working file has been created, the user is encouraged to make any modifications necessary to suit his preferences for format, to meet specific analysis needs, or to reflect the particular circumstances of the manufacturing application being analyzed. All cell references are relative, allowing the user to add, remove, and modify cells in the template knowing that Lotus 1-2-3 will automatically make the necessary reference changes in the rest of the model. After the user makes all desired modifications, the protection option should be exercised for all cells other than input cells.

(4) The remainder of this chapter addresses each of the major sections of the model.

b. "OLD METHOD COST ELEMENTS" and "NEW METHOD COST ELEMENTS"

(1) The first and most important step in using the model is to input the costs of the two alternative manufacturing approaches (the old method and the new method). A separate area of the spreadsheet is provided for each alternative. Cost elements important for robotics/FMS applications are provided for guidance. The user may wish to change some or all of these to reflect company cost tracking and reporting categories, or special aspects of the manufacturing application. The user should feel free to modify the categories as needed, but should be careful that doing so does not lead to double counting. The yearly cost totals should be checked to ensure this.

(2) For cases where a robotic/FMS technology replaces several work

stations, the appropriate costs from each of the old method work stations should be summed to yield a cell total for the old method. Lotus 1-2-3 allows the user to perform this on the worksheet, within each cell. Lotus 1-2-3 also facilitates extrapolation of costs into the future, since it allows extrapolation formulas to be copied across rows. Cost inputs may be in nominal or constant dollars, depending upon the user's analytic preference. An analysis based on nominal costs best exploits the model's capabilities.

(3) We recommend that the user input all costs for both alternatives. Where costs for the old method and new method are the same, the cells may be left empty without affecting the economic analysis results. However, it will result in a distortion of the per unit cost under each method (the per unit cost difference will not be distorted) and will complicate the running of sensitivity analyses later on.

c. "CASH FLOW FROM INVESTMENT"

(1) The third area on the spreadsheet presents the cash flows that would result from moving from the old method to the new method of manufacture. The cell formulas are "plus OLD METHOD minus NEW METHOD", except for salvage value which is a revenue generator. Therefore, its formula is "plus NEW METHOD minus OLD METHOD". If a cost is higher under the new method than the old, the cash flow is negative. If a cost is lower under the new method, the cash flow is positive. For salvage value, the relationship is reversed. The "CASH FLOW FROM INVESTMENT" table shows the cash flows for individual cost elements, and summarizes them for each year

in the analysis period.

d. "NOMINAL, UNADJUSTED IRR AND NPV"

(1) IRR and NPV are computed and displayed by the model. For the NPV computation, the user may use the default value of 20% for the discount rate or input a preferred rate. The IRR and NPV computed here are based on the nominal, undiscounted, before tax cash flow from the previous section.

e. "PRODUCTION QUANTITY ADJUSTMENT (BEFORE TAX)"

(1) This portion of the model provides the user with the option of considering differences in throughput between the old method and new method. The user exercises this option by entering the throughput for each year of the analysis period, for both the old and new method. The model computes and displays for each year: the change in throughput; the percentage change in throughput; the change in production cost per unit; the percentage change in production cost per unit; and the cash flow as modified by the throughput effect.

f. "ADJUSTMENT FOR CHANGES IN QUALITY OR VALUE ADDED"

(1) After the quantity adjustment option, the user is provided the option of adjusting the cash flows for differences in value added at the work station. Differences in value added might result from doing more or less work at the work station under the new method than under the old method, and/or doing the work in such a way as to yield a higher or lower quality finished or intermediate product. For the user to exercise this option, he must enter for each year the change in value added at the work

station, either positive or negative, which will result from the substitution of the new method for the old method of production. This amount can be determined external to the model, or internally by using a formula that references information already on the spreadsheet. For example, change in value added might be entered as a percentage of production cost per unit, referencing this cell in the previous section.

(2) After completion of the value added adjustment, the model computes and displays: the impact of the value added upon cash flow for each year; the new annual cash flow; and in order to indicate the breakeven period, cumulative cash flow for each year in the analysis period. The IRR is presented next, along with the NPV of the investment. The discount rate for the NPV computation may be entered by the user, or the default value of 20% used. Annual and cumulative discounted cash flows are also presented.

g. "AFTER TAX ANALYSIS"; "COMPUTATION OF DEPRECIATION AND INVESTMENT TAX CREDITS"

(1) In this section, the user first inputs the investment schedule for depreciable property, under both the old and new methods. The user inputs the company's investment in each ACRS class of property (3 year, 5 year, 10 year, and 15 year) for each year of the analysis period. The model computes and displays the investment tax credit, the allowable depreciation for each year, and the resulting tax savings. The only limitation in the depreciation section is that the model assumes all investment in 15 year property (real property) is made within the first three years of the project's life. Space has been left in the spreadsheet,

under both the old and new methods, for the user to perform, at his option, a custom analysis of state and local income tax impacts.

(2) Since the tax code frequently changes, the user is advised to periodically update the depreciation and tax computation formulas. For example, modifications to the tax code in 1984 changed the depreciation period for real property from 15 years to 18 years. As of the time of publication of this report, the Treasury Department had not issued regulations on the yearly percentage write-offs for the new 18 year schedule. When these are issued the model's real property depreciation algorithms should be changed accordingly.

1. "SUMMARY OF AFTER TAX ANALYSIS"

(1) This is the last section of the model, and presents the model's final outputs. It presents a summary of the analysis results and contains the information for comparing the economic attractiveness of the two alternatives, and for selecting the preferred option. It presents for each year of the analysis period the before tax undiscounted cash flow (adjusted for any throughput and quality differences), and the impact upon this cash flow of each of the tax impacts. The after tax IRR is presented, along with the NPV of the investment at the user-specified discount rate.

(2) The model then computes the annual and cumulative discounted after tax cash flows, and the after tax IRR based on the discounted cash flows.

IV. APPENDICES

Appendix A

Sample RIDM Application

ROBOTICS/FMS INVESTMENT  
DECISION MODEL  
(Lotus 1-2-3 FLN:RJDM)

OLD METHOD COST ELEMENTS	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
Equipment Purchase					
Equip. Ship. & Install.					
Special Tooling					
Fixtures					
Programming					
Supplies & Material					
Equipment Maintenance	1500	1650	1815	1997	2196
Equipment Repair	5000	5500	6050	6655	7321
Equipment Overhaul			10000		
Facilities Modifications					
Manufacturing Labor	75000	81000	87480	94478	102037
Engineering Labor	1000	1080	1166	1260	1360
Production Control	5000	5400	5832	6299	6802
Shop Supervision					
Material Handling					
Inspection					
Training					
Inventory Costs	10000	10000	10000	10000	10000
Scrap & Rework	15000	15000	15000	15000	15000
Floor Space Costs					
Other MFG. Overhead Costs					
Engineering Overhead					
Administrative Costs					
Property Taxes					
Utilities					
Interest (Cost of borrowed \$)					
Other Expenses					
Equipment Salvage Value					
<b>TOTAL COST, OLD METHOD</b>	<b>\$112,500.00</b>	<b>\$119,630.00</b>	<b>\$137,343.40</b>	<b>\$135,688.17</b>	<b>\$144,716.26</b>

NEW METHOD COST ELEMENTS	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
Equipment Purchase	350000				
Equip. Ship. & Install.	50000				
Special Tooling	70000				
Fixtures	10000				
Programming	30000				
Supplies & Material					
Equipment Maintenance	10000	3000	3300	3630	3993
Equipment Repair	5000	3000	3300	3630	3993
Equipment Overhaul					
Facilities Modifications	15000				
Manufacturing Labor	20000	21600	23328	25194	27210
Engineering Labor	2500	2700	2916	3149	3401
Production Control	1000	1080	1166	1260	1360
Shop Supervision					
Material Handling					
Inspection					
Training					
Inventory Costs	3000	3150	3308	3473	3647
Scrap & Rework	3000	3000	3000	3000	3000
Floor Space Costs					
Other MFG. Overhead Costs					
Engineering Overhead					
Administrative Costs					
Property Taxes					
Utilities					
Interest (Cost of borrowed \$)					
Other Expenses					
Equipment Salvage Value	50000				
<b>TOTAL COST, NEW METHOD</b>	<b>\$519,500.00</b>	<b>\$37,530.00</b>	<b>\$40,317.90</b>	<b>\$43,336.11</b>	<b>\$46,604.01</b>

CASH FLOW FROM INVESTMENT

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Equipment Purchase	-350000	0	0	0	0
Equip. Ship. & Install.	-50000	0	0	0	0
Special Tooling	-70000	0	0	0	0
Fixtures	-10000	0	0	0	0
Programming	-30000	0	0	0	0
Supplies & Material	0	0	0	0	0
Equipment Maintenance	-8500	-1350	-1485	-1634	-1797
Equipment Repair	0	2500	2750	3025	3328
Equipment Overhaul	0	0	10000	0	0
Facilities Modifications	-15000	0	0	0	0
Manufacturing Labor	55000	59400	64152	69284	74827
Engineering Labor	-1500	-1620	-1750	-1890	-2041
Production Control	4000	4320	4666	5039	5442
Shop Supervision	0	0	0	0	0
Material Handling	0	0	0	0	0
Inspection	0	0	0	0	0
Training	0	0	0	0	0
Inventory Costs	7000	6850	6693	6527	6353
Scrap & Rework	12000	12000	12000	12000	12000
Floor Space Costs	0	0	0	0	0
Other MFG. Overhead Costs	0	0	0	0	0
Engineering Overhead	0	0	0	0	0
Administrative Costs	0	0	0	0	0
Property Taxes	0	0	0	0	0
Utilities	0	0	0	0	0
Interest (Cost of borrowed \$)	0	0	0	0	0
Other Expenses	0	0	0	0	0
Equipment Salvage Value	50000	0	0	0	0
NOMINAL CASH FLOW (NCF)	(\$407,000.00)	\$82,100.00	\$97,025.50	\$92,352.07	\$98,112.25

INTERNAL RATE OF RETURN = -0.04

DISCOUNT RATE = 0.20

NPV OF INVESTMENT= (\$142,037.58)

PRODUCTION QUANTITY ADJUSTMENT  
(BEFORE TAX)

PRODUCTION QUANTITY, OLD METHOD	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
GROSS ANNUAL THROUGHPUT (GAT)	1000	1000	1000	1000	1000
AVERAGE COST PER UNIT(CPU)	\$112.50	\$119.63	\$137.34	\$135.69	\$144.72
-----	-----	-----	-----	-----	-----
PRODUCTION QUANTITY, NEW METHOD	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
GROSS ANNUAL THROUGHPUT (GAT)	300	1250	1250	1250	1250
AVERAGE COST PER UNIT(CPU)	\$1,731.67	\$30.02	\$32.25	\$34.67	\$37.28

PRODUCTION QUANTITY ADJUSTMENT RESULTS  
NEW METHOD AS COMPARED TO OLD METHOD

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
CHANGE IN GROSS THROUGHPUT	-700	250	250	250	250
% CHANGE IN GROSS THROUGHPUT	-70.0%	25.0%	25.0%	25.0%	25.0%
CHANGE IN PRODUCTION COST/UNIT	\$1,619.17	(\$89.61)	(\$105.09)	(\$101.02)	(\$107.43)
% CHANGE IN PROD COST/UNIT	1439.3%	-74.9%	-76.5%	-74.4%	-74.2%
CASH FLOW AFTER ADJUSTMENT FOR CHANGE IN PROD QUANTITY	(\$485,750.00)	\$112,007.50	\$131,361.35	\$126,274.11	\$134,291.31

ADJUSTMENT FOR CHANGES IN  
QUALITY OR VALUE ADDED

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
CHANGE IN VALUE ADDED PER UNIT AT THE WORK STATION UNDER NEW METHOD	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CASH FLOW IMPACT OF VAL ADDED	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CASH FLOW, VAL ADDED ADJUSTED	(\$485,750.0)	\$112,007.5	\$131,361.4	\$126,274.1	\$134,291.3
CUM CASH FLOW, VAL ADDED ADJUSTED	(\$485,750.0)	(\$373,742.5)	(\$242,381.2)	(\$116,107.0)	\$18,184.3

IRR (ADJUSTED)= 0.01

DISCOUNT RATE = 0.20

NPV OF INVESTMENT (ADJUSTED)= (\$136,124.64)

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	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
DISCOUNTED CASH FLOW (CONTINUOUS DISCOUNTING)	(\$397,698.46)	\$75,080.87	\$72,092.64	\$56,738.61	\$49,403.01
DISCOUNTED CUM. CASH FLOW	(\$397,698.46)	(\$322,617.59)	(\$250,524.95)	(\$193,786.34)	(\$144,383.33)

AFTER TAX ANALYSIS

COMPUTATION OF DEPRECIATION, INVESTMENT TAX CREDITS, & TAX SAVINGS

INVESTMENT IN DEPRECIABLE ASSETS	OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
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3 Yr Property (SpecI. Tooling)

5 Yr. Property (Most Equipt.)

10 Yr Property

15 Yr. Property (facilities)

TOT DEPRECIABLE INVESTMENT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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COMPUTE FED INVEST TAX CREDITS:

3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0

TOT FED INVESTMENT TAX CREDIT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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DEPRECIATION 1ST YR BASIS

3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	0	0	0	0	0

COMPUTE ANNUAL DEPRECIATION:

3 Yr Property	0	0	0	0	0
5 Yr Property	0	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	0	0	0	0	0

ANNUAL DEPRECIATION	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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FED TAX SAVINGS FROM DEPREC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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FED TAX SAVINGS FROM NON-DEPRECIABLE BUSINESS COSTS	\$15,525.00	\$68,787.25	\$78,972.46	\$78,020.70	\$83,211.85
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OLD METHOD YEAR 1	OLD METHOD YEAR 2	OLD METHOD YEAR 3	OLD METHOD YEAR 4	OLD METHOD YEAR 5
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STATE & LOCAL INCOME TAXES

INVESTMENT IN DEPRECIABLE ASSETS	NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
3 Yr Property (Spec1. Tooling)	70000				
5 Yr. Property (Most Equipt.)	360000				
10 Yr Property					
15 Yr. Property (facilities)	15000				
<b>TOT DEPRECIABLE INVESTMENT</b>	<b>\$445,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

COMPUTE FED INVEST TAX CREDITS:

3 Yr Property	4200	0	0	0	0
5 Yr Property	36000	0	0	0	0
10 Yr Property	0	0	0	0	0
<b>TOT FED INVESTMENT TAX CREDIT</b>	<b>\$40,200.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

DEPRECIATION 1ST YR BASIS

3 Yr Property	67900	0	0	0	0
5 Yr Property	342000	0	0	0	0
10 Yr Property	0	0	0	0	0
15 Yr Property	15000	0	0	0	0

COMPUTE ANNUAL DEPRECIATION:

3 Yr Property	16975	25802	25123	0	0
5 Yr Property	51300	75240	71820	71820	71820
10 Yr Property	0	0	0	0	0
15 Yr Property	1800	1500	1350	1200	1050
<b>ANNUAL DEPRECIATION</b>	<b>\$70,075.00</b>	<b>\$102,542.00</b>	<b>\$98,295.00</b>	<b>\$73,020.00</b>	<b>\$72,870.00</b>
<b>FED TAX SAVINGS FROM DEPREC.</b>	<b>\$32,234.50</b>	<b>\$47,169.32</b>	<b>\$45,214.78</b>	<b>\$33,589.20</b>	<b>\$33,520.20</b>
<b>FED TAX SAVINGS FROM NON-DEPRECIABLE BUSINESS COSTS</b>	<b>\$34,270.00</b>	<b>\$17,263.80</b>	<b>\$18,546.23</b>	<b>\$19,934.61</b>	<b>\$21,437.84</b>

NEW METHOD YEAR 1	NEW METHOD YEAR 2	NEW METHOD YEAR 3	NEW METHOD YEAR 4	NEW METHOD YEAR 5
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STATE & LOCAL INCOME TAXES

SUMMARY OF AFTER TAX ANALYSIS:

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
UNDISC. CASH FLOW (BEF TAX)	(\$485,750.00)	\$112,007.50	\$131,361.35	\$126,274.11	\$134,291.31
ADJUSTMENTS TO CASH FLOW FROM TAX IMPACTS:					
NON-DEPRECIABLE BUSINESS COSTS	\$18,745.00	(\$51,523.45)	(\$60,426.22)	(\$59,086.09)	(\$61,774.00)
INVESTMENT TAX CREDIT	\$40,200.00	\$0.00	\$0.00	\$0.00	\$0.00
DEPRECIATION DEDUCTIONS	\$32,234.50	\$47,169.32	\$45,214.78	\$33,589.20	\$33,520.20
STATE & LOCAL TAXES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
AFTER TAX CASH FLOW (UNDISC)	(\$394,570.50)	\$107,653.37	\$116,149.91	\$101,777.22	\$106,037.51
AFTER TAX CASH FLOW CUMULATIVE (UNDISC)	(\$394,570.50)	(\$286,917.13)	(\$170,767.22)	(\$68,990.00)	\$37,047.50
INTERNAL RATE OF RETURN (AFTER TAX, UNDISC)	0.037				

DISCOUNTED CASH FLOW ANALYSIS:

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
DISCOUNT RATE:	0.20				
AFTER TAX DISCOUNTED CASH FLOW (CONTINUOUS DISCOUNTING)	(\$323,047.00)	\$72,162.21	\$63,744.42	\$45,731.45	\$39,009.02
CUMULATIVE DISCOUNTED CASH FLOW, AFTER TAX, CON'T DISC	(\$323,047.00)	(\$250,884.79)	(\$187,140.37)	(\$141,408.92)	(\$102,399.90)
INTERNAL RATE OF RETURN (AFTER TAX, DISCOUNTED)	-0.151				

Appendix B  
Program Listing

A1: U 'ROBOTICS/FMS INVESTMENT  
B1: '  
A2: U 'DECISION MODEL  
A3: U '(Lotus 1-2-3 FLN:RIDM)  
A8: U 'OLD METHOD  
B8: U "OLD METHOD  
C8: U "OLD METHOD  
D8: U "OLD METHOD  
E8: U "OLD METHOD  
F8: U "OLD METHOD  
G8: U "OLD METHOD  
H8: U "OLD METHOD  
I8: U "OLD METHOD  
J8: U "OLD METHOD  
K8: U "OLD METHOD  
L8: U "OLD METHOD  
M8: U "OLD METHOD  
N8: U "OLD METHOD  
O8: U "OLD METHOD  
P8: U "OLD METHOD  
A9: U 'COST ELEMENTS  
B9: U "YEAR 1  
C9: U "YEAR 2  
D9: U "YEAR 3  
E9: U "YEAR 4  
F9: U "YEAR 5  
G9: U "YEAR 6  
H9: U "YEAR 7  
I9: U "YEAR 8  
J9: U "YEAR 9  
K9: U "YEAR 10  
L9: U "YEAR 11  
M9: U "YEAR 12  
N9: U "YEAR 13  
O9: U "YEAR 14  
P9: U "YEAR 15  
A11: U 'Equipment Purchase  
A12: U 'Equip. Ship. & Install.  
A13: U 'Special Tooling  
A14: U 'Fixtures  
A15: U 'Programming  
A16: U 'Supplies & Material  
A17: U 'Equipment Maintenance  
A18: U 'Equipment Repair  
A19: U 'Equipment Overhaul  
A20: U 'Facilities Modifications  
A21: U 'Manufacturing Labor

A22: U 'Engineering Labor  
A23: U 'Production Control  
A24: U 'Shop Supervision  
A25: U 'Material Handling  
A26: U 'Inspection  
A27: U 'Training  
A28: U 'Inventory Costs  
A29: U 'Scrap & Rework  
A30: U 'Floor Space Costs  
A31: U 'Other MFG. Overhead Costs  
A32: U 'Engineering Overhead  
A33: U 'Administrative Costs  
A34: U 'Property Taxes  
A35: U 'Utilities  
A36: U 'Interest (Cost of borrowed \$)  
A37: U 'Other Expenses  
A39: U 'Equipment Salvage Value  
A41: U 'TOTAL COST, OLD METHOD  
B41: (C2) U @SUM(B37..B11)-B39  
C41: (C2) U @SUM(C37..C11)-C39  
D41: (C2) U @SUM(D37..D11)-D39  
E41: (C2) U @SUM(E37..E11)-E39  
F41: (C2) U @SUM(F37..F11)-F39  
G41: (C2) U @SUM(G37..G11)-G39  
H41: (C2) U @SUM(H37..H11)-H39  
I41: (C2) U @SUM(I37..I11)-I39  
J41: (C2) U @SUM(J37..J11)-J39  
K41: (C2) U @SUM(K37..K11)-K39  
L41: (C2) U @SUM(L37..L11)-L39  
M41: (C2) U @SUM(M37..M11)-M39  
N41: (C2) U @SUM(N37..N11)-N39  
O41: (C2) U @SUM(O37..O11)-O39  
P41: (C2) U @SUM(P37..P11)-P39  
A43: U ' - - - - - - - - - - - - - - -  
B43: U ' - - - - - - - - - - - - - - -  
C43: U ' - - - - - - - - - - - - - - -  
D43: U ' - - - - - - - - - - - - - - -  
E43: U ' - - - - - - - - - - - - - - -  
F43: U ' - - - - - - - - - - - - - - -  
G43: U ' - - - - - - - - - - - - - - -  
H43: U ' - - - - - - - - - - - - - - -  
I43: U ' - - - - - - - - - - - - - - -  
J43: U ' - - - - - - - - - - - - - - -  
K43: U ' - - - - - - - - - - - - - - -  
L43: U ' - - - - - - - - - - - - - - -  
M43: U ' - - - - - - - - - - - - - - -  
N43: U ' - - - - - - - - - - - - - - -

043: U ' - - - - -  
P43: U ' - - -  
A45: U "NEW METHOD  
B45: U "NEW METHOD  
C45: U "NEW METHOD  
D45: U "NEW METHOD  
E45: U "NEW METHOD  
F45: U "NEW METHOD  
G45: U "NEW METHOD  
H45: U "NEW METHOD  
I45: U "NEW METHOD  
J45: U "NEW METHOD  
K45: U "NEW METHOD  
L45: U "NEW METHOD  
M45: U "NEW METHOD  
N45: U "NEW METHOD  
O45: U "NEW METHOD  
P45: U "NEW METHOD  
A46: U 'COST ELEMENTS  
B46: U "YEAR 1  
C46: U "YEAR 2  
D46: U "YEAR 3  
E46: U "YEAR 4  
F46: U "YEAR 5  
G46: U "YEAR 6  
H46: U "YEAR 7  
I46: U "YEAR 8  
J46: U "YEAR 9  
K46: U "YEAR 10  
L46: U "YEAR 11  
M46: U "YEAR 12  
N46: U "YEAR 13  
O46: U "YEAR 14  
P46: U "YEAR 15  
A48: U 'Equipment Purchase  
A49: U 'Equip. Ship. & Install.  
A50: U 'Special Tooling  
A51: U 'Fixtures  
A52: U 'Programming  
A53: U 'Supplies & Material  
A54: U 'Equipment Maintenance  
A55: U 'Equipment Repair  
A56: U 'Equipment Overhaul  
A57: U 'Facilities Modifications  
A58: U 'Manufacturing Labor  
A59: U 'Engineering Labor  
A60: U 'Production Control

A61: U 'Shop Supervision  
A62: U 'Material Handling  
A63: U 'Inspection  
A64: U 'Training  
A65: U 'Inventory Costs  
A66: U 'Scrap & Rework  
A67: U 'Floor Space Costs  
A68: U 'Other MFG. Overhead Costs  
A69: U 'Engineering Overhead  
A70: U 'Administrative Costs  
A71: U 'Property Taxes  
A72: U 'Utilities  
A73: U 'Interest (Cost of borrowed \$)  
A74: U 'Other Expenses  
A76: U 'Equipment Salvage Value  
A78: U 'TOTAL COST, NEW METHOD  
B78: (C2) U @SUM(B74..B48)-B76  
C78: (C2) U @SUM(C74..C48)-C76  
D78: (C2) U @SUM(D74..D48)-D76  
E78: (C2) U @SUM(E74..E48)-E76  
F78: (C2) U @SUM(F74..F48)-F76  
G78: (C2) U @SUM(G74..G48)-G76  
H78: (C2) U @SUM(H74..H48)-H76  
I78: (C2) U @SUM(I74..I48)-I76  
J78: (C2) U @SUM(J74..J48)-J76  
K78: (C2) U @SUM(K74..K48)-K76  
L78: (C2) U @SUM(L74..L48)-L76  
M78: (C2) U @SUM(M74..M48)-M76  
N78: (C2) U @SUM(N74..N48)-N76  
O78: (C2) U @SUM(O74..O48)-O76  
P78: (C2) U @SUM(P74..P48)-P76  
A80: U \-  
B80: U \-  
C80: U \-  
D80: U \-  
E80: U \-  
F80: U \-  
G80: U \-  
H80: U \-  
I80: U \-  
J80: U \-  
K80: U \-  
L80: U \-  
M80: U \-  
N80: U \-  
O80: U \-  
P80: U \-

A81: U "CASH FLOW FROM INVESTMENT  
B83: U "YEAR 1  
C83: U "YEAR 2  
D83: U "YEAR 3  
E83: U "YEAR 4  
F83: U "YEAR 5  
G83: U "YEAR 6  
H83: U "YEAR 7  
I83: U "YEAR 8  
J83: U "YEAR 9  
K83: U "YEAR 10  
L83: U "YEAR 11  
M83: U "YEAR 12  
N83: U "YEAR 13  
O83: U "YEAR 14  
P83: U "YEAR 15  
A85: U Equipment Purchase  
B85: U +B11-B48  
C85: U +C11-C48  
D85: U +D11-D48  
E85: U +E11-E48  
F85: U +F11-F48  
G85: U +G11-G48  
H85: U +H11-H48  
I85: U +I11-I48  
J85: U +J11-J48  
K85: U +K11-K48  
L85: U +L11-L48  
M85: U +M11-M48  
N85: U +N11-N48  
O85: U +O11-O48  
P85: U +P11-P48  
A86: U Equip. Ship. & Install.  
B86: U +B12-B49  
C86: U +C12-C49  
D86: U +D12-D49  
E86: U +E12-E49  
F86: U +F12-F49  
G86: U +G12-G49  
H86: U +H12-H49  
I86: U +I12-I49  
J86: U +J12-J49  
K86: U +K12-K49  
L86: U +L12-L49  
M86: U +M12-M49  
N86: U +N12-N49  
O86: U +O12-O49

P86: U +P12-P49  
A87: U 'Special Tooling  
B87: U +B13-B50  
C87: U +C13-C50  
D87: U +D13-D50  
E87: U +E13-E50  
F87: U +F13-F50  
G87: U +G13-G50  
H87: U +H13-H50  
I87: U +I13-I50  
J87: U +J13-J50  
K87: U +K13-K50  
L87: U +L13-L50  
M87: U +M13-M50  
N87: U +N13-N50  
O87: U +O13-O50  
P87: U +P13-P50  
A88: U 'Fixtures  
B88: U +B14-B51  
C88: U +C14-C51  
D88: U +D14-D51  
E88: U +E14-E51  
F88: U +F14-F51  
G88: U +G14-G51  
H88: U +H14-H51  
I88: U +I14-I51  
J88: U +J14-J51  
K88: U +K14-K51  
L88: U +L14-L51  
M88: U +M14-M51  
N88: U +N14-N51  
O88: U +O14-O51  
P88: U +P14-P51  
A89: U 'Programming  
B89: U +B15-B52  
C89: U +C15-C52  
D89: U +D15-D52  
E89: U +E15-E52  
F89: U +F15-F52  
G89: U +G15-G52  
H89: U +H15-H52  
I89: U +I15-I52  
J89: U +J15-J52  
K89: U +K15-K52  
L89: U +L15-L52  
M89: U +M15-M52  
N89: U +N15-N52

089: U +015-052  
P89: U +P15-P52  
A90: U 'Supplies & Material  
B90: U +B16-B53  
C90: U +C16-C53  
D90: U +D16-D53  
E90: U +E16-E53  
F90: U +F16-F53  
G90: U +G16-G53  
H90: U +H16-H53  
I90: U +I16-I53  
J90: U +J16-J53  
K90: U +K16-K53  
L90: U +L16-L53  
M90: U +M16-M53  
N90: U +N16-N53  
O90: U +O16-O53  
P90: U +P16-P53  
A91: U 'Equipment Maintenance  
B91: U +B17-B54  
C91: U +C17-C54  
D91: U +D17-D54  
E91: U +E17-E54  
F91: U +F17-F54  
G91: U +G17-G54  
H91: U +H17-H54  
I91: U +I17-I54  
J91: U +J17-J54  
K91: U +K17-K54  
L91: U +L17-L54  
M91: U +M17-M54  
N91: U +N17-N54  
O91: U +O17-O54  
P91: U +P17-P54  
A92: U 'Equipment Repair  
B92: U +B18-B55  
C92: U +C18-C55  
D92: U +D18-D55  
E92: U +E18-E55  
F92: U +F18-F55  
G92: U +G18-G55  
H92: U +H18-H55  
I92: U +I18-I55  
J92: U +J18-J55  
K92: U +K18-K55  
L92: U +L18-L55  
M92: U +M18-M55

N92: U +N18-N55  
092: U +O18-055  
P92: U +P18-P55  
A93: U 'Equipment Overhaul  
B93: U +B19-B56  
C93: U +C19-C56  
D93: U +D19-D56  
E93: U +E19-E56  
F93: U +F19-F56  
G93: U +G19-G56  
H93: U +H19-H56  
I93: U +I19-I56  
J93: U +J19-J56  
K93: U +K19-K56  
L93: U +L19-L56  
M93: U +M19-M56  
N93: U +N19-N56  
093: U +O19-056  
P93: U +P19-P56  
A94: U 'Facilities Modifications  
B94: U +B20-B57  
C94: U +C20-C57  
D94: U +D20-D57  
E94: U +E20-E57  
F94: U +F20-F57  
G94: U +G20-G57  
H94: U +H20-H57  
I94: U +I20-I57  
J94: U +J20-J57  
K94: U +K20-K57  
L94: U +L20-L57  
M94: U +M20-M57  
N94: U +N20-N57  
094: U +O20-057  
P94: U +P20-P57  
A95: U 'Manufacturing Labor  
B95: U +B21-B58  
C95: U +C21-C58  
D95: U +D21-D58  
E95: U +E21-E58  
F95: U +F21-F58  
G95: U +G21-G58  
H95: U +H21-H58  
I95: U +I21-I58  
J95: U +J21-J58  
K95: U +K21-K58  
L95: U +L21-L58

M95: U +M21-M58  
N95: U +N21-N58  
O95: U +O21-O58  
P95: U +P21-P58  
A96: U 'Engineering Labor  
B96: U +B22-B59  
C96: U +C22-C59  
D96: U +D22-D59  
E96: U +E22-E59  
F96: U +F22-F59  
G96: U +G22-G59  
H96: U +H22-H59  
I96: U +I22-I59  
J96: U +J22-J59  
K96: U +K22-K59  
L96: U +L22-L59  
M96: U +M22-M59  
N96: U +N22-N59  
O96: U +O22-O59  
P96: U +P22-P59  
A97: U 'Production Control  
B97: U +B23-B60  
C97: U +C23-C60  
D97: U +D23-D60  
E97: U +E23-E60  
F97: U +F23-F60  
G97: U +G23-G60  
H97: U +H23-H60  
I97: U +I23-I60  
J97: U +J23-J60  
K97: U +K23-K60  
L97: U +L23-L60  
M97: U +M23-M60  
N97: U +N23-N60  
O97: U +O23-O60  
P97: U +P23-P60  
A98: U 'Shop Supervision  
B98: U +B24-B61  
C98: U +C24-C61  
D98: U +D24-D61  
E98: U +E24-E61  
F98: U +F24-F61  
G98: U +G24-G61  
H98: U +H24-H61  
I98: U +I24-I61  
J98: U +J24-J61  
K98: U +K24-K61

L98: U +L24-L61  
M98: U +M24-M61  
N98: U +N24-N61  
O98: U +O24-O61  
P98: U +P24-P61  
A99: U 'Material Handling  
B99: U +B25-B62  
C99: U +C25-C62  
D99: U +D25-D62  
E99: U +E25-E62  
F99: U +F25-F62  
G99: U +G25-G62  
H99: U +H25-H62  
I99: U +I25-I62  
J99: U +J25-J62  
K99: U +K25-K62  
L99: U +L25-L62  
M99: U +M25-M62  
N99: U +N25-N62  
O99: U +O25-O62  
P99: U +P25-P62  
A100: U 'Inspection  
B100: U +B26-B63  
C100: U +C26-C63  
D100: U +D26-D63  
E100: U +E26-E63  
F100: U +F26-F63  
G100: U +G26-G63  
H100: U +H26-H63  
I100: U +I26-I63  
J100: U +J26-J63  
K100: U +K26-K63  
L100: U +L26-L63  
M100: U +M26-M63  
N100: U +N26-N63  
O100: U +O26-O63  
P100: U +P26-P63  
A101: U 'Training  
B101: U +B27-B64  
C101: U +C27-C64  
D101: U +D27-D64  
E101: U +E27-E64  
F101: U +F27-F64  
G101: U +G27-G64  
H101: U +H27-H64  
I101: U +I27-I64  
J101: U +J27-J64

K101: U +K27-K64  
L101: U +L27-L64  
M101: U +M27-M64  
N101: U +N27-N64  
O101: U +O27-O64  
P101: U +P27-P64  
A102: U 'Inventory Costs  
B102: U +B28-B65  
C102: U +C28-C65  
D102: U +D28-D65  
E102: U +E28-E65  
F102: U +F28-F65  
G102: U +G28-G65  
H102: U +H28-H65  
I102: U +I28-I65  
J102: U +J28-J65  
K102: U +K28-K65  
L102: U +L28-L65  
M102: U +M28-M65  
N102: U +N28-N65  
O102: U +O28-O65  
P102: U +P28-P65  
A103: U 'Scrap & Rework  
B103: U +B29-B66  
C103: U +C29-C66  
D103: U +D29-D66  
E103: U +E29-E66  
F103: U +F29-F66  
G103: U +G29-G66  
H103: U +H29-H66  
I103: U +I29-I66  
J103: U +J29-J66  
K103: U +K29-K66  
L103: U +L29-L66  
M103: U +M29-M66  
N103: U +N29-N66  
O103: U +O29-O66  
P103: U +P29-P66  
A104: U 'Floor Space Costs  
B104: U +B30-B67  
C104: U +C30-C67  
D104: U +D30-D67  
E104: U +E30-E67  
F104: U +F30-F67  
G104: U +G30-G67  
H104: U +H30-H67  
I104: U +I30-I67

J104: U +J30-J67  
K104: U +K30-K67  
L104: U +L30-L67  
M104: U +M30-M67  
N104: U +N30-N67  
O104: U +O30-O67  
P104: U +P30-P67  
A105: U 'Other MFG. Overhead Costs  
B105: U +B31-B68  
C105: U +C31-C68  
D105: U +D31-D68  
E105: U +E31-E68  
F105: U +F31-F68  
G105: U +G31-G68  
H105: U +H31-H68  
I105: U +I31-I68  
J105: U +J31-J68  
K105: U +K31-K68  
L105: U +L31-L68  
M105: U +M31-M68  
N105: U +N31-N68  
O105: U +O31-O68  
P105: U +P31-P68  
A106: U 'Engineering Overhead  
B106: U +B32-B69  
C106: U +C32-C69  
D106: U +D32-D69  
E106: U +E32-E69  
F106: U +F32-F69  
G106: U +G32-G69  
H106: U +H32-H69  
I106: U +I32-I69  
J106: U +J32-J69  
K106: U +K32-K69  
L106: U +L32-L69  
M106: U +M32-M69  
N106: U +N32-N69  
O106: U +O32-O69  
P106: U +P32-P69  
A107: U 'Administrative Costs  
B107: U +B33-B70  
C107: U +C33-C70  
D107: U +D33-D70  
E107: U +E33-E70  
F107: U +F33-F70  
G107: U +G33-G70  
H107: U +H33-H70

I107: U +I33-I70  
J107: U +J33-J70  
K107: U +K33-K70  
L107: U +L33-L70  
M107: U +M33-M70  
N107: U +N33-N70  
O107: U +O33-O70  
P107: U +P33-P70  
A108: U 'Property Taxes  
B108: U +B34-B71  
C108: U +C34-C71  
D108: U +D34-D71  
E108: U +E34-E71  
F108: U +F34-F71  
G108: U +G34-G71  
H108: U +H34-H71  
I108: U +I34-I71  
J108: U +J34-J71  
K108: U +K34-K71  
L108: U +L34-L71  
M108: U +M34-M71  
N108: U +N34-N71  
O108: U +O34-O71  
P108: U +P34-P71  
A109: U 'Utilities  
B109: U +B35-B72  
C109: U +C35-C72  
D109: U +D35-D72  
E109: U +E35-E72  
F109: U +F35-F72  
G109: U +G35-G72  
H109: U +H35-H72  
I109: U +I35-I72  
J109: U +J35-J72  
K109: U +K35-K72  
L109: U +L35-L72  
M109: U +M35-M72  
N109: U +N35-N72  
O109: U +O35-O72  
P109: U +P35-P72  
A110: U 'Interest (Cost of borrowed \$)  
B110: U +B36-B73  
C110: U +C36-C73  
D110: U +D36-D73  
E110: U +E36-E73  
F110: U +F36-F73  
G110: U +G36-G73

G115: (C2) U +G41-G78  
H115: (C2) U +H41-H78  
I115: (C2) U +I41-I78  
J115: (C2) U +J41-J78  
K115: (C2) U +K41-K78  
L115: (C2) U +L41-L78  
M115: (C2) U +M41-M78  
N115: (C2) U +N41-N78  
O115: (C2) U +O41-O78  
P115: (C2) U +P41-P78  
A117: U \-  
B117: U \-  
C117: U \-  
D117: U \-  
E117: U \-  
F117: U \-  
G117: U \-  
H117: U \-  
I117: U \-  
J117: U \-  
K117: U \-  
L117: U \-  
M117: U \-  
N117: U \-  
O117: U \-  
P117: U \-  
A119: U 'INTERNAL RATE OF RETURN =  
B119: (F2) U @IRR(0.4,B115..P115)  
A121: U 'DISCOUNT RATE =  
B121: (F2) U 0.2  
A123: U 'NPV OF INVESTMENT=  
B123: (C2) U @NPV(B121,B115..P115)  
A125: U \-  
B125: U \-  
C125: U \-  
D125: U \-  
E125: U \-  
F125: U \-  
G125: U \-  
H125: U \-  
I125: U \-  
J125: U \-  
K125: U \-  
L125: U \-  
M125: U \-  
N125: U \-  
O125: U \-

P125: U \-  
A126: U "PRODUCTION QUANTITY ADJUSTMENT  
A127: U "(BEFORE TAX)  
A130: U "PRODUCTION QUANTITY, OLD  
B130: U "OLD METHOD  
C130: U "OLD METHOD  
D130: U "OLD METHOD  
E130: U "OLD METHOD  
F130: U "OLD METHOD  
G130: U "OLD METHOD  
H130: U "OLD METHOD  
I130: U "OLD METHOD  
J130: U "OLD METHOD  
K130: U "OLD METHOD  
L130: U "OLD METHOD  
M130: U "OLD METHOD  
N130: U "OLD METHOD  
O130: U "OLD METHOD  
P130: U "OLD METHOD  
A131: U "METHOD  
B131: U "YEAR 1  
C131: U "YEAR 2  
D131: U "YEAR 3  
E131: U "YEAR 4  
F131: U "YEAR 5  
G131: U "YEAR 6  
H131: U "YEAR 7  
I131: U "YEAR 8  
J131: U "YEAR 9  
K131: U "YEAR 10  
L131: U "YEAR 11  
M131: U "YEAR 12  
N131: U "YEAR 13  
O131: U "YEAR 14  
P131: U "YEAR 15  
A133: U "GROSS ANNUAL THROUGHPUT (GAT)  
A135: U "AVERAGE COST PER UNIT(CPU)  
B135: (C2) U +B41/+B133  
C135: (C2) U +C41/+C133  
D135: (C2) U +D41/+D133  
E135: (C2) U +E41/+E133  
F135: (C2) U +F41/+F133  
G135: (C2) U +G41/+G133  
H135: (C2) U +H41/+H133  
I135: (C2) U +I41/+I133  
J135: (C2) U +J41/+J133  
K135: (C2) U +K41/+K133

L135: (C2) U +L41/+L133  
M135: (C2) U +M41/+M133  
N135: (C2) U +N41/+N133  
O135: (C2) U +O41/+O133  
P135: (C2) U +P41/+P133  
A137: U \ -  
B137: U \ -  
C137: U \ -  
D137: U \ -  
E137: U \ -  
F137: U \ -  
G137: U \ -  
H137: U \ -  
I137: U \ -  
J137: U \ -  
K137: U \ -  
L137: U \ -  
M137: U \ -  
N137: U \ -  
O137: U \ -  
P137: U \ -  
A139: U "PRODUCTION QUANTITY, NEW  
B139: U "NEW METHOD  
C139: U "NEW METHOD  
D139: U "NEW METHOD  
E139: U "NEW METHOD  
F139: U "NEW METHOD  
G139: U "NEW METHOD  
H139: U "NEW METHOD  
I139: U "NEW METHOD  
J139: U "NEW METHOD  
K139: U "NEW METHOD  
L139: U "NEW METHOD  
M139: U "NEW METHOD  
N139: U "NEW METHOD  
O139: U "NEW METHOD  
P139: U "NEW METHOD  
A140: U "METHOD  
B140: U "YEAR 1  
C140: U "YEAR 2  
D140: U "YEAR 3  
E140: U "YEAR 4  
F140: U "YEAR 5  
G140: U "YEAR 6  
H140: U "YEAR 7  
I140: U "YEAR 8  
J140: U "YEAR 9

K140: U "YEAR 10  
L140: U "YEAR 11  
M140: U "YEAR 12  
N140: U "YEAR 13  
O140: U "YEAR 14  
P140: U "YEAR 15  
A142: U "GROSS ANNUAL THROUGHPUT (GAT)  
A144: U "AVERAGE COST PER UNIT (CPU)  
B144: (C2) U +B78//+B142  
C144: (C2) U +C78//+C142  
D144: (C2) U +D78//+D142  
E144: (C2) U +E78//+E142  
F144: (C2) U +F78//+F142  
G144: (C2) U +G78//+G142  
H144: (C2) U +H78//+H142  
I144: (C2) U +I78//+I142  
J144: (C2) U +J78//+J142  
K144: (C2) U +K78//+K142  
L144: (C2) U +L78//+L142  
M144: (C2) U +M78//+M142  
N144: (C2) U +N78//+N142  
O144: (C2) U +O78//+O142  
P144: (C2) U +P78//+P142  
A146: U \-  
B146: U \-  
C146: U \-  
D146: U \-  
E146: U \-  
F146: U \-  
G146: U \-  
H146: U \-  
I146: U \-  
J146: U \-  
K146: U \-  
L146: U \-  
M146: U \-  
N146: U \-  
O146: U \-  
P146: U \-  
A147: U "PRODUCTION QUANTITY ADJUSTMENT RESULTS  
A148: U "NEW METHOD AS COMPARED TO OLD METHOD  
B151: U "YEAR 1  
C151: U "YEAR 2  
D151: U "YEAR 3  
E151: U "YEAR 4  
F151: U "YEAR 5  
G151: U "YEAR 6

H151: U "YEAR 7  
I151: U "YEAR 8  
J151: U "YEAR 9  
K151: U "YEAR 10  
L151: U "YEAR 11  
M151: U "YEAR 12  
N151: U "YEAR 13  
O151: U "YEAR 14  
P151: U "YEAR 15  
A153: U 'CHANGE IN GROSS THROUHPUT  
B153: U +B142-B133  
C153: U +C142-C133  
D153: U +D142-D133  
E153: U +E142-E133  
F153: U +F142-F133  
G153: U +G142-G133  
H153: U +H142-H133  
I153: U +I142-I133  
J153: U +J142-J133  
K153: U +K142-K133  
L153: U +L142-L133  
M153: U +M142-M133  
N153: U +N142-N133  
O153: U +O142-O133  
P153: U +P142-P133  
A155: U '% CHANGE IN GROSS THROUHPUT  
B155: (P1) U +B153/B133  
C155: (P1) U +C153/C133  
D155: (P1) U +D153/D133  
E155: (P1) U +E153/E133  
F155: (P1) U +F153/F133  
G155: (P1) U +G153/G133  
H155: (P1) U +H153/H133  
I155: (P1) U +I153/I133  
J155: (P1) U +J153/J133  
K155: (P1) U +K153/K133  
L155: (P1) U +L153/L133  
M155: (P1) U +M153/M133  
N155: (P1) U +N153/N133  
O155: (P1) U +O153/O133  
P155: (P1) U +P153/P133  
A157: U 'CHANGE IN PRODUCTION COST/UNIT  
B157: (C2) U +B144-B135  
C157: (C2) U +C144-C135  
D157: (C2) U +D144-D135  
E157: (C2) U +E144-E135  
F157: (C2) U +F144-F135

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G157: (C2) U +G144-G135  
H157: (C2) U +H144-H135  
I157: (C2) U +I144-I135  
J157: (C2) U +J144-J135  
K157: (C2) U +K144-K135  
L157: (C2) U +L144-L135  
M157: (C2) U +M144-M135  
N157: (C2) U +N144-N135  
O157: (C2) U +O144-O135  
P157: (C2) U +P144-P135  
A159: U % CHANGE IN PROD COST/UNIT  
B159: (P1) U (+B157/B135)  
C159: (P1) U (+C157/C135)  
D159: (P1) U (+D157/D135)  
E159: (P1) U (+E157/E135)  
F159: (P1) U (+F157/F135)  
G159: (P1) U (+G157/G135)  
H159: (P1) U (+H157/H135)  
I159: (P1) U (+I157/I135)  
J159: (P1) U (+J157/J135)  
K159: (P1) U (+K157/K135)  
L159: (P1) U (+L157/L135)  
M159: (P1) U (+M157/M135)  
N159: (P1) U (+N157/N135)  
O159: (P1) U (+O157/O135)  
P159: (P1) U (+P157/P135)  
A161: U CASH FLOW AFTER ADJUSTMENT  
B161: (C2) U -1\* (+B142\*B157)  
C161: (C2) U -1\* (+C142\*C157)  
D161: (C2) U -1\* (+D142\*D157)  
E161: (C2) U -1\* (+E142\*E157)  
F161: (C2) U -1\* (+F142\*F157)  
G161: (C2) U -1\* (+G142\*G157)  
H161: (C2) U -1\* (+H142\*H157)  
I161: (C2) U -1\* (+I142\*I157)  
J161: (C2) U -1\* (+J142\*J157)  
K161: (C2) U -1\* (+K142\*K157)  
L161: (C2) U -1\* (+L142\*L157)  
M161: (C2) U -1\* (+M142\*M157)  
N161: (C2) U -1\* (+N142\*N157)  
O161: (C2) U -1\* (+O142\*O157)  
P161: (C2) U -1\* (+P142\*P157)  
A162: U FOR CHANGE IN PROD QUANTITY  
A164: U \-  
B164: U \-  
C164: U \-  
D164: U \-

E164: U \-  
F164: U \-  
G164: U \-  
H164: U \-  
I164: U \-  
J164: U \-  
K164: U \-  
L164: U \-  
M164: U \-  
N164: U \-  
O164: U \-  
P164: U \-  
A165: U "ADJUSTMENT FOR CHANGES IN  
A166: U "QUALITY OR VALUE ADDED  
B168: U "YEAR 1  
C168: U "YEAR 2  
D168: U "YEAR 3  
E168: U "YEAR 4  
F168: U "YEAR 5  
G168: U "YEAR 6  
H168: U "YEAR 7  
I168: U "YEAR 8  
J168: U "YEAR 9  
K168: U "YEAR 10  
L168: U "YEAR 11  
M168: U "YEAR 12  
N168: U "YEAR 13  
O168: U "YEAR 14  
P168: U "YEAR 15  
A170: U "CHANGE IN VALUE ADDED PER  
A171: U "UNIT AT THE WORK STATION  
A172: U "UNDER NEW METHOD  
A174: U "CASH FLOW IMPACT OF VAL ADDED  
B174: (C2) U +B170\*B142  
C174: (C2) U +C170\*C142  
D174: (C2) U +D170\*D142  
E174: (C2) U +E170\*E142  
F174: (C2) U +F170\*F142  
G174: (C2) U +G170\*G142  
H174: (C2) U +H170\*H142  
I174: (C2) U +I170\*I142  
J174: (C2) U +J170\*J142  
K174: (C2) U +K170\*K142  
L174: (C2) U +L170\*L142  
M174: (C2) U +M170\*M142  
N174: (C2) U +N170\*N142  
O174: (C2) U +O170\*O142

P174: (C2) U +P170\*P142  
A176: U "CASH FLOW, VAL ADDED ADJUSTED  
B176: (C1) U +B174+B161  
C176: (C1) U +C174+C161  
D176: (C1) U +D174+D161  
E176: (C1) U +E174+E161  
F176: (C1) U +F174+F161  
G176: (C1) U +G174+G161  
H176: (C1) U +H174+H161  
I176: (C1) U +I174+I161  
J176: (C1) U +J174+J161  
K176: (C1) U +K174+K161  
L176: (C1) U +L174+L161  
M176: (C1) U +M174+M161  
N176: (C1) U +N174+N161  
O176: (C1) U +O174+O161  
P176: (C1) U +P174+P161  
A178: U "CUM CASH FLOW, VAL ADD ADJSTED  
B178: (C1) U +B176  
C178: (C1) U @SUM(B178,C176)  
D178: (C1) U @SUM(C178,D176)  
E178: (C1) U @SUM(D178,E176)  
F178: (C1) U @SUM(E178,F176)  
G178: (C1) U @SUM(F178,G176)  
H178: (C1) U @SUM(G178,H176)  
I178: (C1) U @SUM(H178,I176)  
J178: (C1) U @SUM(I178,J176)  
K178: (C1) U @SUM(J178,K176)  
L178: (C1) U @SUM(K178,L176)  
M178: (C1) U @SUM(L178,M176)  
N178: (C1) U @SUM(M178,N176)  
O178: (C1) U @SUM(N178,O176)  
P178: (C1) U @SUM(O178,P176)  
A179: U \--  
B179: U \--  
C179: U \--  
D179: U \--  
E179: U \--  
F179: U \--  
G179: U \--  
H179: U \--  
I179: U \--  
J179: U \--  
K179: U \--  
L179: U \--  
M179: U \--  
N179: U \--

O179: U \-  
P179: U \-  
A181: U 'IRR (ADJUSTED)=  
B181: (F2) U @IRR(0.4,B176..P176)  
A183: U 'DISCOUNT RATE =  
B183: (F2) U 0.2  
A185: U 'NPV OF INVESTMENT (ADJUSTED)=  
B185: (C2) U @NPV(B183,B176..P176)  
A187: U \-  
B187: U \-  
C187: U \-  
D187: U \-  
E187: U \-  
F187: U \-  
G187: U \-  
H187: U \-  
I187: U \-  
J187: U \-  
K187: U \-  
L187: U \-  
M187: U \-  
N187: U \-  
O187: U \-  
P187: U \-  
B189: U "YEAR 1  
C189: U "YEAR 2  
D189: U "YEAR 3  
E189: U "YEAR 4  
F189: U "YEAR 5  
G189: U "YEAR 6  
H189: U "YEAR 7  
I189: U "YEAR 8  
J189: U "YEAR 9  
K189: U "YEAR 10  
L189: U "YEAR 11  
M189: U "YEAR 12  
N189: U "YEAR 13  
O189: U "YEAR 14  
P189: U "YEAR 15  
A191: U "DISCOUNTED CASH FLOW  
B191: (C2) U @EXP(-B183\*1)\*B176  
C191: (C2) U @EXP(-B183\*2)\*C176  
D191: (C2) U @EXP(-B183\*3)\*D176  
E191: (C2) U @EXP(-B183\*4)\*E176  
F191: (C2) U @EXP(-B183\*5)\*F176  
G191: (C2) U @EXP(-B183\*6)\*G176  
H191: (C2) U @EXP(-B183\*7)\*H176

I191: (C2) U @EXP(-B183\*8)\*I176  
J191: (C2) U @EXP(-B183\*9)\*J176  
K191: (C2) U @EXP(-B183\*10)\*K176  
L191: (C2) U @EXP(-B183\*11)\*L176  
M191: (C2) U @EXP(-B183\*12)\*M176  
N191: (C2) U @EXP(-B183\*13)\*N176  
O191: (C2) U @EXP(-B183\*14)\*O176  
P191: (C2) U @EXP(-B183\*15)\*P176  
A192: U ' (CONTINUOUS DISCOUNTING)  
A194: U ' DISCOUNTED CUM. CASH FLOW  
B194: (C2) U +B191  
C194: (C2) U +B194+C191  
D194: (C2) U +C194+D191  
E194: (C2) U +D194+E191  
F194: (C2) U +E194+F191  
G194: (C2) U +F194+G191  
H194: (C2) U +G194+H191  
I194: (C2) U +H194+I191  
J194: (C2) U +I194+J191  
K194: (C2) U +J194+K191  
L194: (C2) U +K194+L191  
M194: (C2) U +L194+M191  
N194: (C2) U +M194+N191  
O194: (C2) U +N194+O191  
P194: (C2) U +O194+P191  
A196: U \-  
B196: U \-  
C196: U \-  
D196: U \-  
E196: U \-  
F196: U \-  
G196: U \-  
H196: U \-  
I196: U \-  
J196: U \-  
K196: U \-  
L196: U \-  
M196: U \-  
N196: U \-  
O196: U \-  
P196: U \-  
A197: U ' AFTER TAX ANALYSIS  
A200: U ' COMPUTATION OF DEPRECIATION, INVESTMENT TAX CREDITS, & TAX SAVINGS  
A202: U ' INVESTMENT IN DEPRECIABLE  
B202: U "OLD METHOD  
C202: U "OLD METHOD  
D202: U "OLD METHOD

E202: U "OLD METHOD  
F202: U "OLD METHOD  
G202: U "OLD METHOD  
H202: U "OLD METHOD  
I202: U "OLD METHOD  
J202: U "OLD METHOD  
K202: U "OLD METHOD  
L202: U "OLD METHOD  
M202: U "OLD METHOD  
N202: U "OLD METHOD  
O202: U "OLD METHOD  
P202: U "OLD METHOD  
A203: U 'ASSETS  
B203: U "YEAR 1  
C203: U "YEAR 2  
D203: U "YEAR 3  
E203: U "YEAR 4  
F203: U "YEAR 5  
G203: U "YEAR 6  
H203: U "YEAR 7  
I203: U "YEAR 8  
J203: U "YEAR 9  
K203: U "YEAR 10  
L203: U "YEAR 11  
M203: U "YEAR 12  
N203: U "YEAR 13  
O203: U "YEAR 14  
P203: U "YEAR 15  
A205: U '3 Yr Property (Specl. Tooling)  
A206: U '5 Yr. Property (Most Equipt.)  
A207: U '10 Yr Property  
A208: U '15 Yr. Property (facilities)  
A210: U 'TOT DEPRECIABLE INVESTMENT  
B210: (C2) U @SUM(B205..B208)  
C210: (C2) U @SUM(C205..C208)  
D210: (C2) U @SUM(D205..D208)  
E210: (C2) U @SUM(E205..E208)  
F210: (C2) U @SUM(F205..F208)  
G210: (C2) U @SUM(G205..G208)  
H210: (C2) U @SUM(H205..H208)  
I210: (C2) U @SUM(I205..I208)  
J210: (C2) U @SUM(J205..J208)  
K210: (C2) U @SUM(K205..K208)  
L210: (C2) U @SUM(L205..L208)  
M210: (C2) U @SUM(M205..M208)  
N210: (C2) U @SUM(N205..N208)  
O210: (C2) U @SUM(O205..O208)

P210: (C2) U @SUM(P205..P208)  
A212: U COMPUTE FED INVEST TAX CREDITS:  
A214: U '3 Yr Property  
B214: U 0.06\*B205  
C214: U 0.06\*C205  
D214: U 0.06\*D205  
E214: U 0.06\*E205  
F214: U 0.06\*F205  
G214: U 0.06\*G205  
H214: U 0.06\*H205  
I214: U 0.06\*I205  
J214: U 0.06\*J205  
K214: U 0.06\*K205  
L214: U 0.06\*L205  
M214: U 0.06\*M205  
N214: U 0.06\*N205  
O214: U 0.06\*O205  
P214: U 0.06\*P205  
A215: U '5 Yr Property  
B215: U 0.1\*B206  
C215: U 0.1\*C206  
D215: U 0.1\*D206  
E215: U 0.1\*E206  
F215: U 0.1\*F206  
G215: U 0.1\*G206  
H215: U 0.1\*H206  
I215: U 0.1\*I206  
J215: U 0.1\*J206  
K215: U 0.1\*K206  
L215: U 0.1\*L206  
M215: U 0.1\*M206  
N215: U 0.1\*N206  
O215: U 0.1\*O206  
P215: U 0.1\*P206  
A216: U '10 Yr Property  
B216: U 0.1\*B207  
C216: U 0.1\*C207  
D216: U 0.1\*D207  
E216: U 0.1\*E207  
F216: U 0.1\*F207  
G216: U 0.1\*G207  
H216: U 0.1\*H207  
I216: U 0.1\*I207  
J216: U 0.1\*J207  
K216: U 0.1\*K207  
L216: U 0.1\*L207  
M216: U 0.1\*M207

N216: U 0.1\*N207  
O216: U 0.1\*O207  
P216: U 0.1\*P207  
A219: U 'TOT FED INVESTMENT TAX CREDIT  
B219: (C2) U @SUM(B217..B214)  
C219: (C2) U @SUM(C217..C214)  
D219: (C2) U @SUM(D217..D214)  
E219: (C2) U @SUM(E217..E214)  
F219: (C2) U @SUM(F217..F214)  
G219: (C2) U @SUM(G217..G214)  
H219: (C2) U @SUM(H217..H214)  
I219: (C2) U @SUM(I217..I214)  
J219: (C2) U @SUM(J217..J214)  
K219: (C2) U @SUM(K217..K214)  
L219: (C2) U @SUM(L217..L214)  
M219: (C2) U @SUM(M217..M214)  
N219: (C2) U @SUM(N217..N214)  
O219: (C2) U @SUM(O217..O214)  
P219: (C2) U @SUM(P217..P214)  
A221: U 'DEPRECIATION 1ST YR BASIS  
A223: U '3 Yr Property  
B223: U (+B205-(B214/2))  
C223: U (+C205-(C214/2))  
D223: U (+D205-(D214/2))  
E223: U (+E205-(E214/2))  
F223: U (+F205-(F214/2))  
G223: U (+G205-(G214/2))  
H223: U (+H205-(H214/2))  
I223: U (+I205-(I214/2))  
J223: U (+J205-(J214/2))  
K223: U (+K205-(K214/2))  
L223: U (+L205-(L214/2))  
M223: U (+M205-(M214/2))  
N223: U (+N205-(N214/2))  
O223: U (+O205-(O214/2))  
P223: U (+P205-(P214/2))  
A224: U '5 Yr Property  
B224: U (+B206-(B215/2))  
C224: U (+C206-(C215/2))  
D224: U (+D206-(D215/2))  
E224: U (+E206-(E215/2))  
F224: U (+F206-(F215/2))  
G224: U (+G206-(G215/2))  
H224: U (+H206-(H215/2))  
I224: U (+I206-(I215/2))  
J224: U (+J206-(J215/2))  
K224: U (+K206-(K215/2))

L224: U (+L206-(L215/2))  
M224: U (+M206-(M215/2))  
N224: U (+N206-(N215/2))  
O224: U (+O206-(O215/2))  
P224: U (+P206-(P215/2))  
A225: U '10 Yr Property  
B225: U (+B207-(B216/2))  
C225: U (+C207-(C216/2))  
D225: U (+D207-(D216/2))  
E225: U (+E207-(E216/2))  
F225: U (+F207-(F216/2))  
G225: U (+G207-(G216/2))  
H225: U (+H207-(H216/2))  
I225: U (+I207-(I216/2))  
J225: U (+J207-(J216/2))  
K225: U (+K207-(K216/2))  
L225: U (+L207-(L216/2))  
M225: U (+M207-(M216/2))  
N225: U (+N207-(N216/2))  
O225: U (+O207-(O216/2))  
P225: U (+P207-(P216/2))  
A226: U '15 Yr Property  
B226: U (+B208)  
C226: U (+C208)  
D226: U (+D208)  
E226: U (+E208)  
F226: U (+F208)  
G226: U (+G208)  
H226: U (+H208)  
I226: U (+I208)  
J226: U (+J208)  
K226: U (+K208)  
L226: U (+L208)  
M226: U (+M208)  
N226: U (+N208)  
O226: U (+O208)  
P226: U (+P208)  
A228: U 'COMPUTE ANNUAL DEPRECIATION:  
A230: U '3 Yr Property  
B230: U 0.25\*B223  
C230: U 0.25\*C223+(B223\*0.38)  
D230: U 0.25\*D223+(C223\*0.38)+(0.37\*B223)  
E230: U 0.25\*E223+(D223\*0.38)+(0.37\*C223)  
F230: U 0.25\*F223+(E223\*0.38)+(0.37\*D223)  
G230: U 0.25\*G223+(F223\*0.38)+(0.37\*E223)  
H230: U 0.25\*H223+(G223\*0.38)+(0.37\*F223)  
I230: U 0.25\*I223+(H223\*0.38)+(0.37\*G223)

C232: U 0.08\*C225+(0.14\*B225)  
D232: U 0.08\*D225+(0.14\*C225)+(0.12\*B225)  
E232: U 0.08\*E225+(0.14\*D225)+(0.12\*C225)+(0.1\*B225)  
F232: U 0.08\*F225+(0.14\*E225)+(0.12\*D225)+(0.1\*C225)+(0.1\*B225)  
G232: U 0.08\*G225+(0.14\*F225)+(0.12\*E225)+(0.1\*D225)+(0.1\*C225)+(0.09\*B225)  
H232: U 0.08\*H225+(0.14\*G225)+(0.12\*F225)+(0.1\*E225)+(0.1\*D225)+(0.1\*C225)+(0.09\*(B225+C225))  
I232: U 0.08\*I225+(0.14\*H225)+(0.12\*G225)+((D225+E225+F225)\*0.1)+(0.09\*(B225+C225+D225))  
J232: U 0.08\*J225+(0.14\*I225)+(0.12\*H225)+(0.1\*(E225+F225+G225))+(0.09\*(B225+C225+D225+E225))  
K232: U 0.08\*K225+(0.14\*J225)+(0.12\*I225)+(0.1\*(F225+G225+H225))+(0.09\*(B225+C225+D225+E225+F225))  
L232: U 0.08\*L225+(0.14\*K225)+(0.12\*J225)+(0.1\*(G225+H225+I225))+(0.09\*(C225+D225+E225+F225))  
M232: U 0.08\*M225+(0.14\*L225)+(0.12\*K225)+(0.1\*(H225+I225+J225))+(0.09\*(D225+E225+F225+G225))  
N232: U 0.08\*N225+(0.14\*M225)+(0.12\*L225)+(0.1\*(I225+J225+K225))+(0.09\*(E225+F225+G225+H225))  
O232: U 0.08\*O225+(0.14\*N225)+(0.12\*M225)+(0.1\*(J225+K225+L225))+(0.09\*(F225+G225+H225+I225))  
P232: U 0.08\*P225+(0.14\*O225)+(0.12\*N225)+(0.1\*(K225+L225+M225))+(0.09\*(G225+H225+I225+J225))  
A233: U '15 Yr Property  
B233: U 0.12\*B226  
C233: U 0.1\*B226+(0.12\*C226)  
D233: U 0.09\*B226+(0.1\*C226)+(0.12\*D226)  
E233: U 0.08\*B226+(0.09\*C226)+(0.1\*D226)  
F233: U 0.07\*B226+(0.08\*C226)+(0.09\*D226)  
G233: U 0.06\*B226+(0.07\*C226)+(0.08\*D226)  
H233: U 0.06\*B226+(0.06\*C226)+(0.07\*D226)

J230: U 0.25\*J223+(I223\*0.38)+(0.37\*H223)  
K230: U 0.25\*K223+(J223\*0.38)+(0.37\*I223)  
L230: U 0.25\*L223+(K223\*0.38)+(0.37\*J223)  
M230: U 0.25\*M223+(L223\*0.38)+(0.37\*K223)  
N230: U 0.25\*N223+(M223\*0.38)+(0.37\*L223)  
O230: U 0.25\*O223+(N223\*0.38)+(0.37\*M223)  
P230: U 0.25\*P223+(O223\*0.38)+(0.37\*N223)  
A231: U '5 Yr Property  
B231: U 0.15\*B224  
C231: U 0.15\*C224+(B224\*0.22)  
D231: U 0.15\*D224+(C224\*0.22)+(0.21\*B224)  
E231: U 0.15\*E224+(D224\*0.22)+(0.21\*C224)+(0.21\*B224)  
F231: U 0.15\*F224+(E224\*0.22)+(0.21\*D224)+(0.21\*C224)+(0.21\*B224)  
G231: U 0.15\*G224+(F224\*0.22)+(0.21\*E224)+(0.21\*D224)+(0.21\*C224)  
H231: U 0.15\*H224+(G224\*0.22)+(0.21\*F224)+(0.21\*E224)+(0.21\*D224)  
I231: U 0.15\*I224+(H224\*0.22)+(0.21\*G224)+(0.21\*F224)+(0.21\*E224)  
J231: U 0.15\*J224+(I224\*0.22)+(0.21\*H224)+(0.21\*G224)+(0.21\*F224)  
K231: U 0.15\*K224+(J224\*0.22)+(0.21\*I224)+(0.21\*H224)+(0.21\*G224)  
L231: U 0.15\*L224+(K224\*0.22)+(0.21\*J224)+(0.21\*I224)+(0.21\*H224)  
M231: U 0.15\*M224+(L224\*0.22)+(0.21\*K224)+(0.21\*J224)+(0.21\*I224)  
N231: U 0.15\*N224+(M224\*0.22)+(0.21\*L224)+(0.21\*K224)+(0.21\*J224)  
O231: U 0.15\*O224+(N224\*0.22)+(0.21\*M224)+(0.21\*L224)+(0.21\*K224)  
P231: U 0.15\*P224+(O224\*0.22)+(0.21\*N224)+(0.21\*M224)+(0.21\*L224)  
A232: U '10 Yr Property  
B232: U 0.08\*B225

I233: U 0.06\*(B226+C226+D226)  
 J233: U 0.06\*(B226+C226+D226)  
 K233: U (0.05\*B226)+(0.06\*(C226+D226))  
 L233: U (0.05\*(B226+C226))+ (0.06\*D226)  
 M233: U 0.05\*(B226+C226+D226)  
 N233: U 0.05\*(B226+C226+D226)  
 O233: U 0.05\*(B226+C226+D226)  
 P233: U 0.05\*(B226+C226+D226)  
 A235: U 'ANNUAL DEPRECIATION  
 B235: (C2) U @SUM(B233..B230)  
 C235: (C2) U @SUM(C233..C230)  
 D235: (C2) U @SUM(D233..D230)  
 E235: (C2) U @SUM(E233..E230)  
 F235: (C2) U @SUM(F233..F230)  
 G235: (C2) U @SUM(G233..G230)  
 H235: (C2) U @SUM(H233..H230)  
 I235: (C2) U @SUM(I233..I230)  
 J235: (C2) U @SUM(J233..J230)  
 K235: (C2) U @SUM(K233..K230)  
 L235: (C2) U @SUM(L233..L230)  
 M235: (C2) U @SUM(M233..M230)  
 N235: (C2) U @SUM(N233..N230)  
 O235: (C2) U @SUM(O233..O230)  
 P235: (C2) U @SUM(P233..P230)  
 A237: U 'FED TAX SAVINGS FROM DEPREC.  
 B237: (C2) U 0.46\*(B235+(B155\*B235))  
 C237: (C2) U 0.46\*(C235+(C155\*C235))  
 D237: (C2) U 0.46\*(D235+(D155\*D235))  
 E237: (C2) U 0.46\*(E235+(E155\*E235))  
 F237: (C2) U 0.46\*(F235+(F155\*F235))  
 G237: (C2) U 0.46\*(G235+(G155\*G235))  
 H237: (C2) U 0.46\*(H235+(H155\*H235))  
 I237: (C2) U 0.46\*(I235+(I155\*I235))  
 J237: (C2) U 0.46\*(J235+(J155\*J235))  
 K237: (C2) U 0.46\*(K235+(K155\*K235))  
 L237: (C2) U 0.46\*(L235+(L155\*L235))  
 M237: (C2) U 0.46\*(M235+(M155\*M235))  
 N237: (C2) U 0.46\*(N235+(N155\*N235))  
 O237: (C2) U 0.46\*(O235+(O155\*O235))  
 P237: (C2) U 0.46\*(P235+(P155\*P235))  
 A239: U 'FED TAX SAVINGS FROM NON-  
 B239: (C2) U 0.46\*((B41-B210)+(B155\*(B41-B210)))  
 C239: (C2) U 0.46\*((C41-C210)+(C155\*(C41-C210)))  
 D239: (C2) U 0.46\*((D41-D210)+(D155\*(D41-D210)))  
 E239: (C2) U 0.46\*((E41-E210)+(E155\*(E41-E210)))  
 F239: (C2) U 0.46\*((F41-F210)+(F155\*(F41-F210)))  
 G239: (C2) U 0.46\*((G41-G210)+(G155\*(G41-G210)))

H239: (C2) U 0.46\*((H41-H210)+(H155\*(H41-H210)))  
I239: (C2) U 0.46\*((I41-I210)+(I155\*(I41-I210)))  
J239: (C2) U 0.46\*((J41-J210)+(J155\*(J41-J210)))  
K239: (C2) U 0.46\*((K41-K210)+(K155\*(K41-K210)))  
L239: (C2) U 0.46\*((L41-L210)+(L155\*(L41-L210)))  
M239: (C2) U 0.46\*((M41-M210)+(M155\*(M41-M210)))  
N239: (C2) U 0.46\*((N41-N210)+(N155\*(N41-N210)))  
O239: (C2) U 0.46\*((O41-O210)+(O155\*(O41-O210)))  
P239: (C2) U 0.46\*((P41-P210)+(P155\*(P41-P210)))  
A240: U "DEPRECIABLE BUSINESS COSTS  
A241: U \-  
B241: U \-  
C241: U \-  
D241: U \-  
E241: U \-  
F241: U \-  
G241: U \-  
H241: U \-  
I241: U \-  
J241: U \-  
K241: U \-  
L241: U \-  
M241: U \-  
N241: U \-  
O241: U \-  
P241: U \-  
B242: U "OLD METHOD  
C242: U "OLD METHOD  
D242: U "OLD METHOD  
E242: U "OLD METHOD  
F242: U "OLD METHOD  
G242: U "OLD METHOD  
H242: U "OLD METHOD  
I242: U "OLD METHOD  
J242: U "OLD METHOD  
K242: U "OLD METHOD  
L242: U "OLD METHOD  
M242: U "OLD METHOD  
N242: U "OLD METHOD  
O242: U "OLD METHOD  
P242: U "OLD METHOD  
B243: U "YEAR 1  
C243: U "YEAR 2  
D243: U "YEAR 3  
E243: U "YEAR 4  
F243: U "YEAR 5  
G243: U "YEAR 6

H243: U "YEAR 7  
I243: U "YEAR 8  
J243: U "YEAR 9  
K243: U "YEAR 10  
L243: U "YEAR 11  
M243: U "YEAR 12  
N243: U "YEAR 13  
O243: U "YEAR 14  
P243: U "YEAR 15  
A245: U 'STATE & LOCAL INCOME TAXES  
A247: U \-  
B247: U \-  
C247: U \-  
D247: U \-  
E247: U \-  
F247: U \-  
G247: U \-  
H247: U \-  
I247: U \-  
J247: U \-  
K247: U \-  
L247: U \-  
M247: U \-  
N247: U \-  
O247: U \-  
P247: U \-  
A249: U 'INVESTMENT IN DEPRECIABLE  
B249: U "NEW METHOD  
C249: U "NEW METHOD  
D249: U "NEW METHOD  
E249: U "NEW METHOD  
F249: U "NEW METHOD  
G249: U "NEW METHOD  
H249: U "NEW METHOD  
I249: U "NEW METHOD  
J249: U "NEW METHOD  
K249: U "NEW METHOD  
L249: U "NEW METHOD  
M249: U "NEW METHOD  
N249: U "NEW METHOD  
O249: U "NEW METHOD  
P249: U "NEW METHOD  
A250: U 'ASSETS  
B250: U "YEAR 1  
C250: U "YEAR 2  
D250: U "YEAR 3  
E250: U "YEAR 4

F250: U "YEAR 5  
G250: U "YEAR 6  
H250: U "YEAR 7  
I250: U "YEAR 8  
J250: U "YEAR 9  
K250: U "YEAR 10  
L250: U "YEAR 11  
M250: U "YEAR 12  
N250: U "YEAR 13  
O250: U "YEAR 14  
P250: U "YEAR 15  
A252: U '3 Yr Property (Specl. Tooling)  
A253: U '5 Yr. Property (Most Equipt.)  
A254: U '10 Yr Property  
A255: U '15 Yr. Property (facilities)  
A257: U 'TOT DEPRECIABLE INVESTMENT  
B257: (C2) U @SUM(B252..B255)  
C257: (C2) U @SUM(C252..C255)  
D257: (C2) U @SUM(D252..D255)  
E257: (C2) U @SUM(E252..E255)  
F257: (C2) U @SUM(F252..F255)  
G257: (C2) U @SUM(G252..G255)  
H257: (C2) U @SUM(H252..H255)  
I257: (C2) U @SUM(I252..I255)  
J257: (C2) U @SUM(J252..J255)  
K257: (C2) U @SUM(K252..K255)  
L257: (C2) U @SUM(L252..L255)  
M257: (C2) U @SUM(M252..M255)  
N257: (C2) U @SUM(N252..N255)  
O257: (C2) U @SUM(O252..O255)  
P257: (C2) U @SUM(P252..P255)  
A259: U 'COMPUTE FED INVEST TAX CREDITS:  
A261: U '3 Yr Property  
B261: U 0.06\*B252  
C261: U 0.06\*C252  
D261: U 0.06\*D252  
E261: U 0.06\*E252  
F261: U 0.06\*F252  
G261: U 0.06\*G252  
H261: U 0.06\*H252  
I261: U 0.06\*I252  
J261: U 0.06\*J252  
K261: U 0.06\*K252  
L261: U 0.06\*L252  
M261: U 0.06\*M252  
N261: U 0.06\*N252  
O261: U 0.06\*O252

P261: U 0.06\*P252  
A262: U '5 Yr Property  
B262: U 0.1\*B253  
C262: U 0.1\*C253  
D262: U 0.1\*D253  
E262: U 0.1\*E253  
F262: U 0.1\*F253  
G262: U 0.1\*G253  
H262: U 0.1\*H253  
I262: U 0.1\*I253  
J262: U 0.1\*J253  
K262: U 0.1\*K253  
L262: U 0.1\*L253  
M262: U 0.1\*M253  
N262: U 0.1\*N253  
O262: U 0.1\*O253  
P262: U 0.1\*P253  
A263: U '10 Yr Property  
B263: U 0.1\*B254  
C263: U 0.1\*C254  
D263: U 0.1\*D254  
E263: U 0.1\*E254  
F263: U 0.1\*F254  
G263: U 0.1\*G254  
H263: U 0.1\*H254  
I263: U 0.1\*I254  
J263: U 0.1\*J254  
K263: U 0.1\*K254  
L263: U 0.1\*L254  
M263: U 0.1\*M254  
N263: U 0.1\*N254  
O263: U 0.1\*O254  
P263: U 0.1\*P254  
A266: U 'TOT FED INVESTMENT TAX CREDIT  
B266: (C2) U @SUM(B264..B261)  
C266: (C2) U @SUM(C264..C261)  
D266: (C2) U @SUM(D264..D261)  
E266: (C2) U @SUM(E264..E261)  
F266: (C2) U @SUM(F264..F261)  
G266: (C2) U @SUM(G264..G261)  
H266: (C2) U @SUM(H264..H261)  
I266: (C2) U @SUM(I264..I261)  
J266: (C2) U @SUM(J264..J261)  
K266: (C2) U @SUM(K264..K261)  
L266: (C2) U @SUM(L264..L261)  
M266: (C2) U @SUM(M264..M261)  
N266: (C2) U @SUM(N264..N261)

0266: (C2) U  $\partial\text{SUM}(0264..0261)$   
P266: (C2) U  $\partial\text{SUM}(P264..P261)$   
A268: U  $^3$  DEPRECIATION 1ST YR BASIS  
A270: U  $^3$  Yr Property  
B270: U  $(+B252-(B261/2))$   
C270: U  $(+C252-(C261/2))$   
D270: U  $(+D252-(D261/2))$   
E270: U  $(+E252-(E261/2))$   
F270: U  $(+F252-(F261/2))$   
G270: U  $(+G252-(G261/2))$   
H270: U  $(+H252-(H261/2))$   
I270: U  $(+I252-(I261/2))$   
J270: U  $(+J252-(J261/2))$   
K270: U  $(+K252-(K261/2))$   
L270: U  $(+L252-(L261/2))$   
M270: U  $(+M252-(M261/2))$   
N270: U  $(+N252-(N261/2))$   
O270: U  $(+O252-(O261/2))$   
P270: U  $(+P252-(P261/2))$   
A271: U  $^5$  Yr Property  
B271: U  $(+B253-(B262/2))$   
C271: U  $(+C253-(C262/2))$   
D271: U  $(+D253-(D262/2))$   
E271: U  $(+E253-(E262/2))$   
F271: U  $(+F253-(F262/2))$   
G271: U  $(+G253-(G262/2))$   
H271: U  $(+H253-(H262/2))$   
I271: U  $(+I253-(I262/2))$   
J271: U  $(+J253-(J262/2))$   
K271: U  $(+K253-(K262/2))$   
L271: U  $(+L253-(L262/2))$   
M271: U  $(+M253-(M262/2))$   
N271: U  $(+N253-(N262/2))$   
O271: U  $(+O253-(O262/2))$   
P271: U  $(+P253-(P262/2))$   
A272: U  $^10$  Yr Property  
B272: U  $(+B254-(B263/2))$   
C272: U  $(+C254-(C263/2))$   
D272: U  $(+D254-(D263/2))$   
E272: U  $(+E254-(E263/2))$   
F272: U  $(+F254-(F263/2))$   
G272: U  $(+G254-(G263/2))$   
H272: U  $(+H254-(H263/2))$   
I272: U  $(+I254-(I263/2))$   
J272: U  $(+J254-(J263/2))$   
K272: U  $(+K254-(K263/2))$   
L272: U  $(+L254-(L263/2))$

M272: U (+M254-(M263/2))  
 N272: U (+N254-(N263/2))  
 O272: U (+O254-(O263/2))  
 P272: U (+P254-(P263/2))  
 A273: U '15 Yr Property  
 B273: U (+B255)  
 C273: U (+C255)  
 D273: U (+D255)  
 E273: U (+E255)  
 F273: U (+F255)  
 G273: U (+G255)  
 H273: U (+H255)  
 I273: U (+I255)  
 J273: U (+J255)  
 K273: U (+K255)  
 L273: U (+L255)  
 M273: U (+M255)  
 N273: U (+N255)  
 O273: U (+O255)  
 P273: U (+P255)  
 A275: U 'COMPUTE ANNUAL DEPRECIATION:  
 A277: U '3 Yr Property  
 B277: U 0.25\*B270  
 C277: U 0.25\*C270+(B270\*0.38)  
 D277: U 0.25\*D270+(C270\*0.38)+(0.37\*B270)  
 E277: U 0.25\*E270+(D270\*0.38)+(0.37\*C270)  
 F277: U 0.25\*F270+(E270\*0.38)+(0.37\*D270)  
 G277: U 0.25\*G270+(F270\*0.38)+(0.37\*E270)  
 H277: U 0.25\*H270+(G270\*0.38)+(0.37\*F270)  
 I277: U 0.25\*I270+(H270\*0.38)+(0.37\*G270)  
 J277: U 0.25\*J270+(I270\*0.38)+(0.37\*H270)  
 K277: U 0.25\*K270+(J270\*0.38)+(0.37\*I270)  
 L277: U 0.25\*L270+(K270\*0.38)+(0.37\*J270)  
 M277: U 0.25\*M270+(L270\*0.38)+(0.37\*K270)  
 N277: U 0.25\*N270+(M270\*0.38)+(0.37\*L270)  
 O277: U 0.25\*O270+(N270\*0.38)+(0.37\*M270)  
 P277: U 0.25\*P270+(O270\*0.38)+(0.37\*N270)  
 A278: U '5 Yr Property  
 B278: U 0.15\*B271  
 C278: U 0.15\*C271+(B271\*0.22)  
 D278: U 0.15\*D271+(C271\*0.22)+(0.21\*B271)  
 E278: U 0.15\*E271+(D271\*0.22)+(0.21\*C271)+(0.21\*B271)  
 F278: U 0.15\*F271+(E271\*0.22)+(0.21\*D271)+(0.21\*C271)+(0.21\*B271)  
 G278: U 0.15\*G271+(F271\*0.22)+(0.21\*E271)+(0.21\*D271)+(0.21\*C271)  
 H278: U 0.15\*H271+(G271\*0.22)+(0.21\*F271)+(0.21\*E271)+(0.21\*D271)  
 I278: U 0.15\*I271+(H271\*0.22)+(0.21\*G271)+(0.21\*F271)+(0.21\*E271)  
 J278: U 0.15\*J271+(I271\*0.22)+(0.21\*H271)+(0.21\*G271)+(0.21\*F271)

K278: U 0.15\*K271+(J271\*0.22)+(0.21\*I271)+(0.21\*H271)+(0.21\*G271)  
L278: U 0.15\*L271+(K271\*0.22)+(0.21\*J271)+(0.21\*I271)+(0.21\*H271)  
M278: U 0.15\*M271+(L271\*0.22)+(0.21\*K271)+(0.21\*J271)+(0.21\*I271)  
N278: U 0.15\*N271+(M271\*0.22)+(0.21\*L271)+(0.21\*K271)+(0.21\*J271)  
O278: U 0.15\*O271+(N271\*0.22)+(0.21\*M271)+(0.21\*L271)+(0.21\*K271)  
P278: U 0.15\*P271+(O271\*0.22)+(0.21\*N271)+(0.21\*M271)+(0.21\*L271)  
A279: U '10 Yr Property  
B279: U 0.08\*B272  
C279: U 0.08\*C272+(0.14\*B272)  
D279: U 0.08\*D272+(0.14\*C272)+(0.12\*B272)  
E279: U 0.08\*E272+(0.14\*D272)+(0.12\*C272)+(0.1\*B272)  
F279: U 0.08\*F272+(0.14\*E272)+(0.12\*D272)+(0.1\*C272)+(0.1\*B272)  
G279: U 0.08\*G272+(0.14\*F272)+(0.12\*E272)+(0.1\*D272)+(0.1\*C272)+(0.1\*B272)  
H279: U 0.08\*H272+(0.14\*G272)+(0.12\*F272)+(0.1\*E272)+(0.1\*D272)+(0.1\*C272)+(0.09\*B272)  
I279: U 0.08\*I272+(0.14\*H272)+(0.12\*G272)+((D272+E272+F272)\*0.1)+(0.09\*(B272+C272))  
J279: U 0.08\*J272+(0.14\*I272)+(0.12\*H272)+(0.1\*(E272+F272+G272))+(0.09\*(B272+C272+D272))  
K279: U 0.08\*K272+(0.14\*J272)+(0.12\*I272)+(0.1\*(F272+G272+H272))+(0.09\*(B272+C272+D272+E272))  
L279: U 0.08\*L272+(0.14\*K272)+(0.12\*J272)+(0.1\*(G272+H272+I272))+(0.09\*(C272+D272+E272+F272))  
M279: U 0.08\*M272+(0.14\*L272)+(0.12\*K272)+(0.1\*(H272+I272+J272))+(0.09\*(D272+E272+F272+G272))  
N279: U 0.08\*N272+(0.14\*M272)+(0.12\*L272)+(0.1\*(I272+J272+K272))+(0.09\*(E272+F272+G272+H272))  
O279: U 0.08\*O272+(0.14\*N272)+(0.12\*M272)+(0.1\*(J272+K272+L272))+(0.09\*(F272+G272+H272+I272))  
P279: U 0.08\*P272+(0.14\*O272)+(0.12\*N272)+(0.1\*(K272+L272+M272))+(0.09\*(G272+H272+I272+J272))

A280: U "15 Yr Property  
B280: U 0.12\*B273  
C280: U 0.1\*B273+(0.12\*D273)  
D280: U 0.09\*B273+(0.1\*C273)+(0.12\*D273)  
E280: U 0.08\*B273+(0.09\*C273)+(0.1\*D273)  
F280: U 0.07\*B273+(0.08\*C273)+(0.09\*D273)  
G280: U 0.06\*B273+(0.07\*C273)+(0.08\*D273)  
H280: U 0.06\*B273+(0.06\*C273)+(0.07\*D273)  
I280: U 0.06\*(B273+C273+D273)  
J280: U 0.06\*(B273+C273+D273)  
K280: U (0.05\*B273)+(0.06\*(C273+D273))  
L280: U (0.05\*(B273+C273))+(0.06\*D273)  
M280: U 0.05\*(B273+C273+D273)  
N280: U 0.05\*(B273+C273+D273)  
O280: U 0.05\*(B273+C273+D273)  
P280: U 0.05\*(B273+C273+D273)  
A282: U "ANNUAL DEPRECIATION  
B282: (C2) U @SUM(B280..B277)  
C282: (C2) U @SUM(C280..C277)  
D282: (C2) U @SUM(D280..D277)  
E282: (C2) U @SUM(E280..E277)  
F282: (C2) U @SUM(F280..F277)  
G282: (C2) U @SUM(G280..G277)  
H282: (C2) U @SUM(H280..H277)  
I282: (C2) U @SUM(I280..I277)

J282: (C2) U @SUM(J280..J277)  
K282: (C2) U @SUM(K280..K277)  
L282: (C2) U @SUM(L280..L277)  
M282: (C2) U @SUM(M280..M277)  
N282: (C2) U @SUM(N280..N277)  
O282: (C2) U @SUM(O280..O277)  
P282: (C2) U @SUM(P280..P277)  
A284: U "FED TAX SAVINGS FROM DEPREC.  
B284: (C2) U 0.46\*B282  
C284: (C2) U 0.46\*C282  
D284: (C2) U 0.46\*D282  
E284: (C2) U 0.46\*E282  
F284: (C2) U 0.46\*F282  
G284: (C2) U 0.46\*G282  
H284: (C2) U 0.46\*H282  
I284: (C2) U 0.46\*I282  
J284: (C2) U 0.46\*J282  
K284: (C2) U 0.46\*K282  
L284: (C2) U 0.46\*L282  
M284: (C2) U 0.46\*M282  
N284: (C2) U 0.46\*N282  
O284: (C2) U 0.46\*O282  
P284: (C2) U 0.46\*P282  
A286: U "FED TAX SAVINGS FROM NON-  
B286: (C2) U 0.46\*(B78-B257)  
C286: (C2) U 0.46\*(C78-C257)  
D286: (C2) U 0.46\*(D78-D257)  
E286: (C2) U 0.46\*(E78-E257)  
F286: (C2) U 0.46\*(F78-F257)  
G286: (C2) U 0.46\*(G78-G257)  
H286: (C2) U 0.46\*(H78-H257)  
I286: (C2) U 0.46\*(I78-I257)  
J286: (C2) U 0.46\*(J78-J257)  
K286: (C2) U 0.46\*(K78-K257)  
L286: (C2) U 0.46\*(L78-L257)  
M286: (C2) U 0.46\*(M78-M257)  
N286: (C2) U 0.46\*(N78-N257)  
O286: (C2) U 0.46\*(O78-O257)  
P286: (C2) U 0.46\*(P78-P257)  
A287: U "DEPRECIABLE BUSINESS COSTS  
A289: U \-  
B289: U \-  
C289: U \-  
D289: U \-  
E289: U \-  
F289: U \-  
G289: U \-

H289: U \-  
I289: U \-  
J289: U \-  
K289: U \-  
L289: U \-  
M289: U \-  
N289: U \-  
O289: U \-  
P289: U \-  
B290: U "NEW METHOD  
C290: U "NEW METHOD  
D290: U "NEW METHOD  
E290: U "NEW METHOD  
F290: U "NEW METHOD  
G290: U "NEW METHOD  
H290: U "NEW METHOD  
I290: U "NEW METHOD  
J290: U "NEW METHOD  
K290: U "NEW METHOD  
L290: U "NEW METHOD  
M290: U "NEW METHOD  
N290: U "NEW METHOD  
O290: U "NEW METHOD  
P290: U "NEW METHOD  
B291: U "YEAR 1  
C291: U "YEAR 2  
D291: U "YEAR 3  
E291: U "YEAR 4  
F291: U "YEAR 5  
G291: U "YEAR 6  
H291: U "YEAR 7  
I291: U "YEAR 8  
J291: U "YEAR 9  
K291: U "YEAR 10  
L291: U "YEAR 11  
M291: U "YEAR 12  
N291: U "YEAR 13  
O291: U "YEAR 14  
P291: U "YEAR 15  
A293: U 'STATE & LOCAL INCOME TAXES  
A295: U \-  
B295: U \-  
C295: U \-  
D295: U \-  
E295: U \-  
F295: U \-  
G295: U \-

H295: U \-  
I295: U \-  
J295: U \-  
K295: U \-  
L295: U \-  
M295: U \-  
N295: U \-  
O295: U \-  
P295: U \-  
A296: U 'SUMMARY OF AFTER TAX ANALYSIS:  
B298: U "YEAR 1  
C298: U "YEAR 2  
D298: U "YEAR 3  
E298: U "YEAR 4  
F298: U "YEAR 5  
G298: U "YEAR 6  
H298: U "YEAR 7  
I298: U "YEAR 8  
J298: U "YEAR 9  
K298: U "YEAR 10  
L298: U "YEAR 11  
M298: U "YEAR 12  
N298: U "YEAR 13  
O298: U "YEAR 14  
P298: U "YEAR 15  
A300: U 'UNDISC. CASH FLOW (BEF TAX)  
B300: (C2) U +B176  
C300: (C2) U +C176  
D300: (C2) U +D176  
E300: (C2) U +E176  
F300: (C2) U +F176  
G300: (C2) U +G176  
H300: (C2) U +H176  
I300: (C2) U +I176  
J300: (C2) U +J176  
K300: (C2) U +K176  
L300: (C2) U +L176  
M300: (C2) U +M176  
N300: (C2) U +N176  
O300: (C2) U +O176  
P300: (C2) U +P176  
A302: U 'ADJUSTMENTS TO CASH FLOW  
A303: U 'FROM TAX IMPACTS:  
A305: U 'NON-DEPRECIABLE BUSINESS COSTS  
B305: (C2) U +B286-B239  
C305: (C2) U +C286-C239  
D305: (C2) U +D286-D239

E305: (C2) U +E286-E239  
F305: (C2) U +F286-F239  
G305: (C2) U +G286-G239  
H305: (C2) U +H286-H239  
I305: (C2) U +I286-I239  
J305: (C2) U +J286-J239  
K305: (C2) U +K286-K239  
L305: (C2) U +L286-L239  
M305: (C2) U +M286-M239  
N305: (C2) U +N286-N239  
O305: (C2) U +O286-O239  
P305: (C2) U +P286-P239  
A307: U INVESTMENT TAX CREDIT  
B307: (C2) U (B266-B219)  
C307: (C2) U (C266-C219)  
D307: (C2) U (D266-D219)  
E307: (C2) U (E266-E219)  
F307: (C2) U (F266-F219)  
G307: (C2) U (G266-G219)  
H307: (C2) U (H266-H219)  
I307: (C2) U (I266-I219)  
J307: (C2) U (J266-J219)  
K307: (C2) U (K266-K219)  
L307: (C2) U (L266-L219)  
M307: (C2) U (M266-M219)  
N307: (C2) U (N266-N219)  
O307: (C2) U (O266-O219)  
P307: (C2) U (P266-P219)  
A309: U DEPRECIATION DEDUCTIONS  
B309: (C2) U (+B284-B237)  
C309: (C2) U (+C284-C237)  
D309: (C2) U (+D284-D237)  
E309: (C2) U (+E284-E237)  
F309: (C2) U (+F284-F237)  
G309: (C2) U (+G284-G237)  
H309: (C2) U (+H284-H237)  
I309: (C2) U (+I284-I237)  
J309: (C2) U (+J284-J237)  
K309: (C2) U (+K284-K237)  
L309: (C2) U (+L284-L237)  
M309: (C2) U (+M284-M237)  
N309: (C2) U (+N284-N237)  
O309: (C2) U (+O284-O237)  
P309: (C2) U (+P284-P237)  
A311: U STATE & LOCAL TAXES  
B311: (C2) U +B245-B293  
C311: (C2) U +C245-C293

D311: (C2) U +D245-D293  
E311: (C2) U +E245-E293  
F311: (C2) U +F245-F293  
G311: (C2) U +G245-G293  
H311: (C2) U +H245-H293  
I311: (C2) U +I245-I293  
J311: (C2) U +J245-J293  
K311: (C2) U +K245-K293  
L311: (C2) U +L245-L293  
M311: (C2) U +M245-M293  
N311: (C2) U +N245-N293  
O311: (C2) U +O245-O293  
P311: (C2) U +P245-P293  
A313: U 'AFTER TAX CASH FLOW (UNDISC)  
B313: (C2) U +B300+B305+B307+B309+B311  
C313: (C2) U +C300+C305+C307+C309+C311  
D313: (C2) U +D300+D305+D307+D309+D311  
E313: (C2) U +E300+E305+E307+E309+E311  
F313: (C2) U +F300+F305+F307+F309+F311  
G313: (C2) U +G300+G305+G307+G309+G311  
H313: (C2) U +H300+H305+H307+H309+H311  
I313: (C2) U +I300+I305+I307+I309+I311  
J313: (C2) U +J300+J305+J307+J309+J311  
K313: (C2) U +K300+K305+K307+K309+K311  
L313: (C2) U +L300+L305+L307+L309+L311  
M313: (C2) U +M300+M305+M307+M309+M311  
N313: (C2) U +N300+N305+N307+N309+N311  
O313: (C2) U +O300+O305+O307+O309+O311  
P313: (C2) U +P300+P305+P307+P309+P311  
A315: U 'AFTER TAX CASH FLOW  
B315: (C2) U +B313  
C315: (C2) U +B315+C313  
D315: (C2) U +C315+D313  
E315: (C2) U +D315+E313  
F315: (C2) U +E315+F313  
G315: (C2) U +F315+G313  
H315: (C2) U +G315+H313  
I315: (C2) U +H315+I313  
J315: (C2) U +I315+J313  
K315: (C2) U +J315+K313  
L315: (C2) U +K315+L313  
M315: (C2) U +L315+M313  
N315: (C2) U +M315+N313  
O315: (C2) U +N315+O313  
P315: (C2) U +O315+P313  
A316: U 'CUMULATIVE (UNDISC)  
A318: U 'INTERNAL RATE OF RETURN

B318: (F3) U @IRR(0.5, B313..P313)  
A319: U ' (AFTER TAX, UNDISC)  
B319: U '  
A322: U ' DISCOUNTED CASH FLOW ANALYSIS:  
A324: U ' DISCOUNT RATE:  
B324: (F2) U 0.2  
B326: U "YEAR 1  
C326: U "YEAR 2  
D326: U "YEAR 3  
E326: U "YEAR 4  
F326: U "YEAR 5  
G326: U "YEAR 6  
H326: U "YEAR 7  
I326: U "YEAR 8  
J326: U "YEAR 9  
K326: U "YEAR 10  
L326: U "YEAR 11  
M326: U "YEAR 12  
N326: U "YEAR 13  
O326: U "YEAR 14  
P326: U "YEAR 15  
A328: U ' AFTER TAX DISCOUNTED CASH  
B328: (C2) U @EXP(-B324\*1)\*B313  
C328: (C2) U @EXP(-B324\*2)\*C313  
D328: (C2) U @EXP(-B324\*3)\*D313  
E328: (C2) U @EXP(-B324\*4)\*E313  
F328: (C2) U @EXP(-B324\*5)\*F313  
G328: (C2) U @EXP(-B324\*6)\*G313  
H328: (C2) U @EXP(-B324\*7)\*H313  
I328: (C2) U @EXP(-B324\*8)\*I313  
J328: (C2) U @EXP(-B324\*9)\*J313  
K328: (C2) U @EXP(-B324\*10)\*K313  
L328: (C2) U @EXP(-B324\*11)\*L313  
M328: (C2) U @EXP(-B324\*12)\*M313  
N328: (C2) U @EXP(-B324\*13)\*N313  
O328: (C2) U @EXP(-B324\*14)\*O313  
P328: (C2) U @EXP(-B324\*15)\*P313  
A329: U ' FLOW (CONTINUOUS DISCOUNTING)  
A331: U ' CUMULATIVE DISCOUNTED CASH  
B331: (C2) U +B328  
C331: (C2) U +B331+C328  
D331: (C2) U +C331+D328  
E331: (C2) U +D331+E328  
F331: (C2) U +E331+F328  
G331: (C2) U +F331+G328  
H331: (C2) U +G331+H328  
I331: (C2) U +H331+I328

J331: (C2) U +J331+J328  
K331: (C2) U +J331+K328  
L331: (C2) U +K331+L328  
M331: (C2) U +L331+M328  
N331: (C2) U +M331+N328  
O331: (C2) U +N331+O328  
P331: (C2) U +O331+P328  
A332: U ^FLOW, AFTER TAX, CON'T DISC  
A334: U ^INTERNAL RATE OF RETURN  
B334: (F3) U @IRR(0.4,B328..P328)  
A345: U ^ (AFTER TAX, DISCOUNTED)  
A340: U \END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END\END  
A341: U ^ MAXIMUM # OF YEARS  
B341: U 15  
A345: U ^KEYBOARD MACROS:  
A346: U ^ {home}{goto}ADDMESSAGE~{goto}C365~/wgrm~/rncYEARS~~/rncCLOSEOUT~A491~  
A347: U ^ {?}~{right}~/rncCOLUMNS~~/rncFORMCONVERT~A405~~+CURRENTYEARS-YEARS{edit}{calc}~

A348: U ^/xiCOLUMNS=1^~/wdcF1..P1^~/xgFORMCONVERT^  
A349: U ^/xiCOLUMNS=2^~/wdc01..P1^~/xgFORMCONVERT^  
A350: U ^/xiCOLUMNS=3^~/wdcN1..P1^~/xgFORMCONVERT^  
A351: U ^/xiCOLUMNS=4^~/wdcM1..P1^~/xgFORMCONVERT^  
A352: U ^/xiCOLUMNS=5^~/wdcL1..P1^~/xgFORMCONVERT^  
A353: U ^/xiCOLUMNS=6^~/wdcK1..P1^~/xgFORMCONVERT^  
A354: U ^/xiCOLUMNS=7^~/wdcJ1..P1^~/xgFORMCONVERT^  
A355: U ^/xiCOLUMNS=8^~/wdcI1..P1^~/xgFORMCONVERT^  
A356: U ^/xiCOLUMNS=9^~/wdcH1..P1^~/xgFORMCONVERT^  
A357: U ^/xiCOLUMNS=10^~/wdcG1..P1^~/xgFORMCONVERT^  
A358: U ^/xiCOLUMNS=11^~/wdcF1..P1^~/xgFORMCONVERT^  
A359: U ^/xiCOLUMNS=12^~/wdcE1..P1^~/xgFORMCONVERT^  
A360: U ^/xiCOLUMNS=13^~/wdcD1..P1^~/xgFORMCONVERT^  
A361: U ^/xiCOLUMNS=14^~/wdcC1..P1^~/xgFORMCONVERT^  
A362: U ^/xiCOLUMNS=0^~/xgCLOSEOUT^  
A363: U ^/rndERROR^A385^{\goto}ERROR^/xgERROR^  
A365: U ^Enter the number of years to compute:  
C365:  
D365:  
A366: U ^  
A367: U ^ and press the "Enter" key.  
A385: U ^ERROR: Limit number of years to 15 or less.  
A386: U ^Press escape and type "Alt-A" again.  
A405: ^/xiCOLUMNS=1^{\goto}B119^@IRR(0.4,B115..0115)^  
A406: ^/xiCOLUMNS=1^{\goto}B123^@NPV(B121,B115..0115)^  
A407: U ^/xiCOLUMNS=1^{\goto}B181^@IRR(0.4,B176..0176)^  
A408: U ^/xiCOLUMNS=1^{\goto}B185^@NPV(B183,B176..0176)^  
A409: U ^/xiCOLUMNS=1^{\goto}B318^@IRR(0.5,B313..0313)^  
A410: U ^/xiCOLUMNS=1^{\goto}B334^@IRR(0.4,B328..0328)^/xgCLOSEOUT^  
A411: ^/xiCOLUMNS=2^{\goto}B119^@IRR(0.4,B115..N115)^

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A412: /*xiCOLUMNS=2~~~{goto}B123~@NPV(B121,B115..N115)~
A413: U /*xiCOLUMNS=2~~~{goto}B181~@IRR(0.4,B176..N176)~
A414: U /*xiCOLUMNS=2~~~{goto}B185~@NPV(B183,B176..N176)~
A415: U /*xiCOLUMNS=2~~~{goto}B318~@IRR(0.5,B313..M313)~
A416: U /*xiCOLUMNS=2~~~{goto}B334~@IRR(0.4,B328..N328)~//xgCLOSEOUT~
A417: /*xiCOLUMNS=3~~~{goto}B119~@IRR(0.4,B115..M115)~
A418: /*xiCOLUMNS=3~~~{goto}B123~@NPV(B121,B115..M115)~
A419: U /*xiCOLUMNS=3~~~{goto}B181~@IRR(0.4,B176..M176)~
A420: U /*xiCOLUMNS=3~~~{goto}B185~@NPV(B183,B176..M176)~
A421: U /*xiCOLUMNS=3~~~{goto}B318~@IRR(0.5,B313..M313)~
A422: U /*xiCOLUMNS=3~~~{goto}B334~@IRR(0.4,B328..M328)~//xgCLOSEOUT~
A423: /*xiCOLUMNS=4~~~{goto}B119~@IRR(0.4,B115..L115)~
A424: /*xiCOLUMNS=4~~~{goto}B123~@NPV(B121,B115..L115)~
A425: U /*xiCOLUMNS=4~~~{goto}B181~@IRR(0.4,B176..L176)~
A426: U /*xiCOLUMNS=4~~~{goto}B185~@NPV(B183,B176..L176)~
A427: U /*xiCOLUMNS=4~~~{goto}B318~@IRR(0.5,B313..L313)~
A428: U /*xiCOLUMNS=4~~~{goto}B334~@IRR(0.4,B328..L328)~//xgCLOSEOUT~
A429: /*xiCOLUMNS=5~~~{goto}B119~@IRR(0.4,B115..K115)~
A430: /*xiCOLUMNS=5~~~{goto}B123~@NPV(B121,B115..K115)~
A431: U /*xiCOLUMNS=5~~~{goto}B181~@IRR(0.4,B176..K176)~
A432: U /*xiCOLUMNS=5~~~{goto}B185~@NPV(B183,B176..K176)~
A433: U /*xiCOLUMNS=5~~~{goto}B318~@IRR(0.5,B313..K313)~
A434: U /*xiCOLUMNS=5~~~{goto}B334~@IRR(0.4,B328..K328)~//xgCLOSEOUT~
A435: /*xiCOLUMNS=6~~~{goto}B119~@IRR(0.4,B115..J115)~
A436: /*xiCOLUMNS=6~~~{goto}B123~@NPV(B121,B115..J115)~
A437: U /*xiCOLUMNS=6~~~{goto}B181~@IRR(0.4,B176..J176)~
A438: U /*xiCOLUMNS=6~~~{goto}B185~@NPV(B183,B176..J176)~
A439: U /*xiCOLUMNS=6~~~{goto}B318~@IRR(0.5,B313..J313)~
A440: U /*xiCOLUMNS=6~~~{goto}B334~@IRR(0.4,B328..J328)~//xgCLOSEOUT~
A441: /*xiCOLUMNS=7~~~{goto}B119~@IRR(0.4,B115..I115)~
A442: /*xiCOLUMNS=7~~~{goto}B123~@NPV(B121,B115..I115)~
A443: U /*xiCOLUMNS=7~~~{goto}B181~@IRR(0.4,B176..I176)~
A444: U /*xiCOLUMNS=7~~~{goto}B185~@NPV(B183,B176..I176)~
A445: U /*xiCOLUMNS=7~~~{goto}B318~@IRR(0.5,B313..I313)~
A446: U /*xiCOLUMNS=7~~~{goto}B334~@IRR(0.4,B328..I328)~//xgCLOSEOUT~
A447: /*xiCOLUMNS=8~~~{goto}B119~@IRR(0.4,B115..H115)~
A448: /*xiCOLUMNS=8~~~{goto}B123~@NPV(B121,B115..H115)~
A449: U /*xiCOLUMNS=8~~~{goto}B181~@IRR(0.4,B176..H176)~
A450: U /*xiCOLUMNS=8~~~{goto}B185~@NPV(B183,B176..H176)~
A451: U /*xiCOLUMNS=8~~~{goto}B318~@IRR(0.5,B313..H313)~
A452: U /*xiCOLUMNS=8~~~{goto}B334~@IRR(0.4,B328..H328)~//xgCLOSEOUT~
A453: /*xiCOLUMNS=9~~~{goto}B119~@IRR(0.4,B115..G115)~
A454: /*xiCOLUMNS=9~~~{goto}B123~@NPV(B121,B115..G115)~
A455: U /*xiCOLUMNS=9~~~{goto}B181~@IRR(0.4,B176..G176)~
A456: U /*xiCOLUMNS=9~~~{goto}B185~@NPV(B183,B176..G176)~
A457: U /*xiCOLUMNS=9~~~{goto}B318~@IRR(0.5,B313..G313)~
A458: U /*xiCOLUMNS=9~~~{goto}B334~@IRR(0.4,B328..G328)~//xgCLOSEOUT~

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A459: '/xiCOLUMNS=10~~~{goto}B119^@IRR(0.4,B115..F115)~  
A460: '/xiCOLUMNS=10~~~{goto}B123^@NPV(B121,B115..F115)~  
A461: U '/xiCOLUMNS=10~~~{goto}B181^@IRR(0.4,B176..F176)~  
A462: U '/xiCOLUMNS=10~~~{goto}B185^@NPV(B183,B176..F176)~  
A463: U '/xiCOLUMNS=10~~~{goto}B318^@IRR(0.5,B313..F313)~  
A464: U '/xiCOLUMNS=10~~~{goto}B334^@IRR(0.4,B328..F328)~/xgCLOSEOUT~  
A465: '/xiCOLUMNS=11~~~{goto}B119^@IRR(0.4,B115..E115)~  
A466: '/xiCOLUMNS=11~~~{goto}B123^@NPV(B121,B115..E115)~  
A467: U '/xiCOLUMNS=11~~~{goto}B181^@IRR(0.4,B176..E176)~  
A468: U '/xiCOLUMNS=11~~~{goto}B185^@NPV(B183,B176..E176)~  
A469: U '/xiCOLUMNS=11~~~{goto}B318^@IRR(0.5,B313..E313)~  
A470: U '/xiCOLUMNS=11~~~{goto}B334^@IRR(0.4,B328..E328)~/xgCLOSEOUT~  
A471: '/xiCOLUMNS=12~~~{goto}B119^@IRR(0.4,B115..D115)~  
A472: '/xiCOLUMNS=12~~~{goto}B123^@NPV(B121,B115..D115)~  
A473: U '/xiCOLUMNS=12~~~{goto}B181^@IRR(0.4,B176..D176)~  
A474: U '/xiCOLUMNS=12~~~{goto}B185^@NPV(B183,B176..D176)~  
A475: U '/xiCOLUMNS=12~~~{goto}B318^@IRR(0.5,B313..D313)~  
A476: U '/xiCOLUMNS=12~~~{goto}B334^@IRR(0.4,B328..D328)~/xgCLOSEOUT~  
A477: '/xiCOLUMNS=13~~~{goto}B119^@IRR(0.4,B115..C115)~  
A478: '/xiCOLUMNS=13~~~{goto}B123^@NPV(B121,B115..C115)~  
A479: U '/xiCOLUMNS=13~~~{goto}B181^@IRR(0.4,B176..C176)~  
A480: U '/xiCOLUMNS=13~~~{goto}B185^@NPV(B183,B176..C176)~  
A481: U '/xiCOLUMNS=13~~~{goto}B318^@IRR(0.5,B313..C313)~  
A482: U '/xiCOLUMNS=13~~~{goto}B334^@IRR(0.4,B328..C328)~/xgCLOSEOUT~  
A483: '/xiCOLUMNS=14~~~{goto}B119^@IRR(0.4,B115..B115)~  
A484: '/xiCOLUMNS=14~~~{goto}B123^@NPV(B121,B115..B115)~  
A485: U '/xiCOLUMNS=14~~~{goto}B181^@IRR(0.4,B176..B176)~  
A486: U '/xiCOLUMNS=14~~~{goto}B185^@NPV(B183,B176..B176)~  
A487: U '/xiCOLUMNS=14~~~{goto}B318^@IRR(0.5,B313..B313)~  
A488: U '/xiCOLUMNS=14~~~{goto}B334^@IRR(0.4,B328..B328)~/xgCLOSEOUT~  
A491: U '/wgna~/rnr~~~{home}~/reA337..d500~~~

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